Multi-Hazard Mitigation Plan

Schuyler County

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Multi-Hazard Mitigation Plan

Schuyler County, Illinois

Adoption Date: -- _____ --

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Table of Contents

Section 1 - Public Planning Process

1.1 Narrative Description

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created **Ha**zards **US**A **M**ulti-**H**azard (HAZUS-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. The Indiana Department of Homeland Security has determined that HAZUS-MH should play a critical role in Indiana's risk assessments. The Polis Center (Polis) at Indiana University Purdue University Indianapolis (IUPUI) and Southern Illinois University at Carbondale (SIU) are assisting Schuyler County planning staff with performing the hazard risk assessment.

1.2 Planning Team Information

The Schuyler County Multi-Hazard Mitigation Planning Team is headed by Richard Utter, who is the primary point of contact. Members of the planning team include representatives from various county departments, cities and towns, and public and private utilities. Table 1-1 identifies the planning team individuals and the organizations they represent.

Table 1-1: Multi Hazard Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Richard L. Utter	Coordinator	ESDA	Schuyler County
Wendy Hillyer	Administrative Assistant	ESDA	Schuyler County
David Schneider	Engineer	Highway Department	Schuyler County
Suzette Rice	Chief Officer	Supervisor of Assessment	Schuyler County
Linda Ward	County Clerk	Office of County Clerk	Schuyler County
Becky Niewohner	Administrator	Health Department	Schuyler County
Ken Pitlik	Councilman	City Council—Emergency Committee	City of Rushville
Victor Menely	Chief	Fire Protection Dist.	Schuyler Co. FPD & City of Rushville
Sandra Trusewych	Director	Community Development Department	Two River Regional Council

Name	Title	Organization	Jurisdiction
Matt Plater	Superintendent	Superintendent of Schools	Schuyler-Industry Dist #5
Max McClellan	Chairman	Schuyler County Board	Schuyler County
Don Schieferdecker	Sheriff/911 Coordinator	Sheriff's Department	Schuyler County
Jessica Kirby	Planning (PIO)	ERC – Health Department	Schuyler County
Rob Baker		Village of Camden	Village of Camden
Jack Swearing		Village of Littleton	Village of Littleton
Joanna Stay		Sarah D. Culbertson Memorial Hospital	Rushville
Jeffrey Boyd	Fire Chief	Browning	Browning

The Disaster Mitigation Act (DMA) planning regulations stress that planning team members must be active participants. The Schuyler County MHMP committee members were actively involved on the following components:

- Attending the MHMP meetings
- Providing available GIS data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

An MHMP kickoff meeting was held at the Fulton County Health Department in Canton, IL on February 3, 2010. Representatives from Southern Illinois University explained the rationale behind the MHMP program and answered questions from the participants. SIUC also provided an overview of HAZUS-MH, described the timeline and the process of the mitigation planning project, and presented Schuyler County with a Memorandum of Understanding (MOU) for sharing data and information.

The Schuyler County Multi-Hazard Mitigation Planning Committee met on February 3, 2010, March 17, 2010, May 5, 2010, July 14th, 2010, and August 25, 2010. Each meeting was approximately two hours in length. The meeting minutes are included in Appendix A. During these meetings, the planning team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects, and assisted with preparation of the public participation information.

1.3 Public Involvement in Planning Process

An effort was made to solicit public input during the planning process, and a public meeting was held on May 5, 2010 to review the county's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains articles published by the local newspaper throughout the public input process.

1.4 Neighboring Community Involvement

The Schuyler County planning team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The team also invited participation from adjacent counties to obtain their

involvement in the planning process. Details of neighboring stakeholders' involvement are summarized in Table 1-2.

Table 1-2: Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Organization	Participation Description
John Simon	Adams County	Adams County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Curt Hannig	Brown County	Brown County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Roger Lauder	Cass County	Cass County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Chris Helle	Fulton County	Fulton County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Jack Curfman	Hancock County	Hancock County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Dan Kreps	McDonough County	Mc Donough County Emergency and Disaster Services Agency	Invited to participate in public meeting, reviewed the plan and provide comments.

1.5 Review of Technical and Fiscal Resources

The MHMP planning team has identified representatives from key agencies to assist in the planning process. Technical data, reports, and studies were obtained from these agencies. The organizations and their contributions are summarized in Table 1-3.

Table 1-3: Key Agency Resources Provided

Agency Name	Resources Provided
Schuyler County Supervisor of Assessments and Engineering Department	Parcel Map, Tax and Structure Data
Illinois Environmental Protection Agency	Illinois 2008 Section 303(d) Listed Waters and watershed maps
U.S. Census	County Profile Information, e.g. Population and Physical Characteristics
Department of Commerce and Economic Opportunity	Community Profiles
Illinois Department of Employment Security	Industrial Employment by Sector
NOAA National Climatic Data Center	Climate Data
Illinois Emergency Management Agency	2007 Illinois Natural Hazard Mitigation Plan
Illinois Water Survey (State Climatologist Office)	Climate Data
United States Geological Survey	Physiographic/Hill Shade Map, Earthquake Information, Hydrology
Illinois State Geological Survey	Geologic, Karst Train, Physiographic Division and Coal Mining Maps

1.6 Review of Existing Plans

Schuyler County and its local communities utilized a variety of planning documents to direct community development. These documents include land use plans, comprehensive plans,

emergency response plans, municipal ordinances, and building codes. The planning process also incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 1-4 lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 1-4: Planning Documents Used for MHMP Planning Process

Author(s)	Year	Title	Description	Where Used
FEMA	2009	Schuyler County Flood Insurance Study	Describes the NFIP program, which communities participates; provide flood maps	Sections 4 and 5
Supervisor of Assessments	2009	GIS Database	Parcel and Assessor Data For Schuyler County.	Section 4
State of Illinois Emergency Management Plan	2007	2007 Illinois Natural Hazard Mitigation Plan	This plan provides an overview of the process for identifying and mitigating natural hazards in Illinois as require by the Disaster Mitigation Act of 2000.	Guidance on hazards and mitigation measures and background on historical disasters in Illinois.

Section 2 - Jurisdiction Participation Information

The incorporated communities included in this multi-jurisdictional plan are listed in Table 2-1.

Table 2-1: Participating Jurisdictions

Jurisdiction Name
Schuyler County
City of Rushville
Village of Browning
Village of Camden
Village of Littleton

2.1 Adoption by Local Governing Body

The draft plan was made available on August 25, 2010 to the planning team for review. Comments were then accepted. The Schuyler County hazard mitigation planning team presented and recommended the plan to the County Commissioners, who adopted it on <date adopted>. Resolution adoptions are included in Appendix C of this plan.

2.2 Jurisdiction Participation

It is required that each jurisdiction participates in the planning process. Table 2-2 lists each jurisdiction and describes its participation in the construction of this plan.

Table 2-2: Jurisdiction Participation

Jurisdiction Name	Participating Member	Participation Description
Schuyler County	Richard Utter—ESDA Coordinator	MHMP planning team member
City of Rushville	Ken Pitlik—Councilman	MHMP planning team member
Village of Camden	Robert Baker—Mayor	MHMP planning team member
Village of Browning	Jeff Boyd—Fire Chief	MHMP planning team member
Village of Littleton	Jack Swearingen—Mayor & Fire Chief	MHMP planning team member

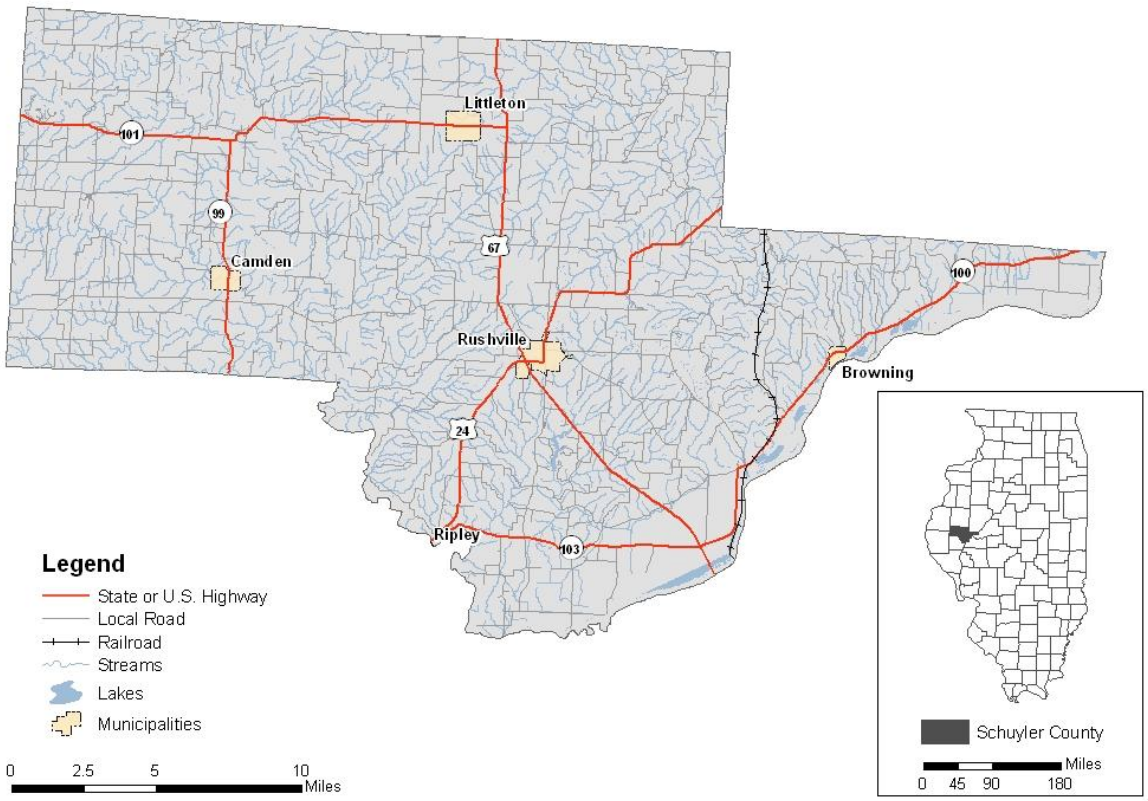
All members of the MHMP planning committee were actively involved in attending the MHMP meetings, providing available Geographic Information Systems (GIS) data and historical hazard information, reviewing and providing comments on the draft plans, coordinating and participating in the public input process, and coordinating the county's formal adoption of the plan.

Section 3 - Jurisdiction Information

The first white settlers ventured into what is now Schuyler County in 1823, where they met a roving band of Kickapoo Indians. Two years later in 1825, Schuyler County was formed from Pike and Fulton Counties and named after Revolutionary soldier and member of the Continental Congress General Philip Schuyler. The City of Rushville is the county seat.

Schuyler County is located in the west-central Illinois. The county has total land area of 441 square miles. It is bordered by McDonough County in the north, Fulton County in the northeast, Mason County in the east, Cass County in the southeast, Brown County in the south, Adams County in the southwest, and Hancock County in the northwest. The Illinois River forms the eastern boundary of Schuyler County, and the La Moine River forms part of the southern boundary. Figure 3-1 depicts Schuyler County's location.

Figure 3-1: Schuyler County, Illinois

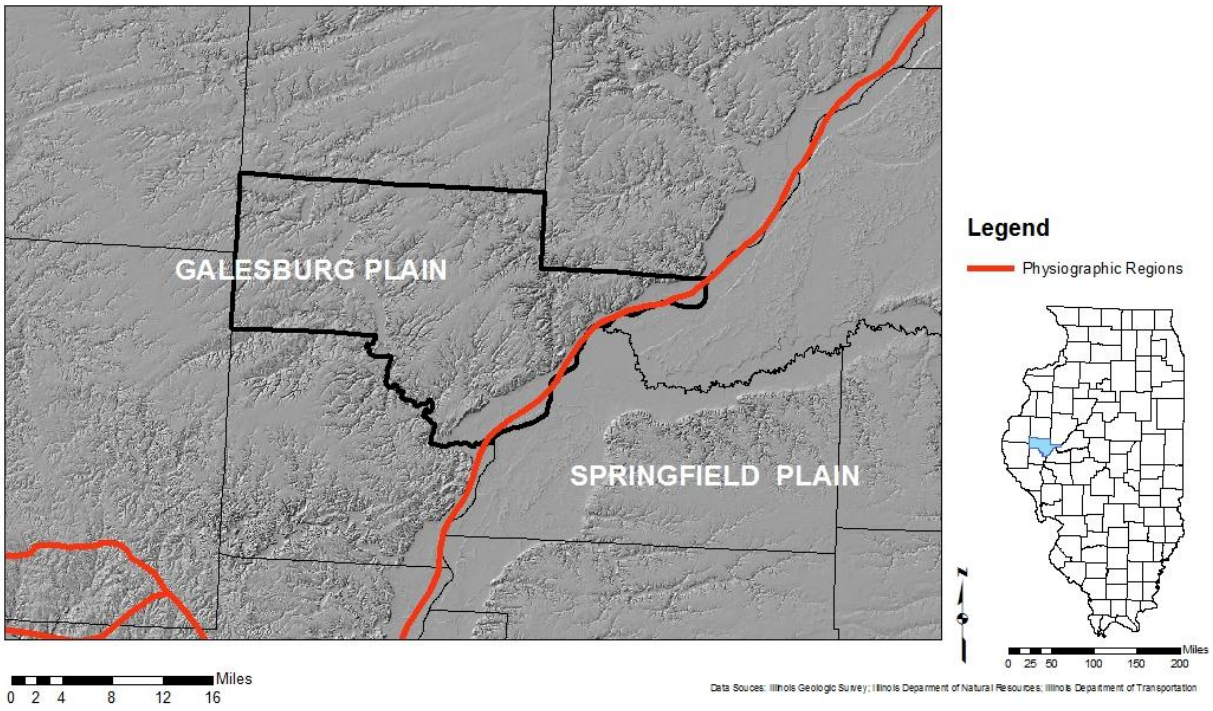


Sources: http://www.fedstats.gov/qf/states/17000.html; http://factfinder.census.gov; http://www.genealogytrails.com

3.1 Topography

Schuyler County is situated in the Central Lowland Province of the Till Plains Section and lies within the Galesburg Plain physiographic division. The Galesburg Plain is a till plain of Illinoisan age. The topography varies from level ground to rolling hills with a few moraine

ridges. Part of county's southern border is defined by the Illinois River. Along the Illinois River is the physiographic border of the Springfield Plain.



3.2 Climate

Schuyler County climate is typical of Central Illinois. The variables of temperature, precipitation, and snowfall can vary greatly from one year to the next. Winter temperatures can fall below freezing starting as early as September and extending as late as May. Based on National Climatic Data Center (NCDC) normals from 1971 to 2000, the average winter low is 14.6° F and the average winter high is 38.3° F. In summer, the average low is 60.8° F and average high is 86.5° F. Average annual precipitation is 39.32 inches throughout the year.

3.3 Demographics

In 2000, Schuyler County had a population of 7,189. According to American FactFinder (2008), Schuyler County experienced a population decline of 1.03%. The population is spread throughout 13 townships: Bainbridge, Birmingham, Brooklyn, Browning, Buena Vista, Camden, Frederick, Hickory, Huntsville, Littleton, Oakland, Rushville, and Woodstock. The largest community in Schuyler County is Rushville, which has a population of approximately 3,212. The breakdown of population by township is included in Table 3-1. Townships containing incorporated communities are marked with an asterisk (*).

Table 3-1: Population by Community

Community	2000 Population	% of County
Bainbridge	540	7.51
Birmingham	150	2.09
Brooklyn	213	2.96
Browning*	456	6.34
Buena Vista*	1,426	19.84
Camden*	270	3.76
Frederick	181	2.52
Hickory	172	2.39
Huntsville	160	2.23
Littleton*	372	5.17
Oakland	176	2.45
Rushville*	2,760	38.39
Woodstock	313	4.35

Source: American FactFinder, 2000

3.4 Economy

American FactFinder reported for 2000 that 68.8% of the workforce in Schuyler County was employed in the private sector. The breakdown is included in Table 3-2. Educational, health and social services represents the largest sector, employing approximately 22.6% of the workforce. The 2000 annual per capita income in Schuyler County is $17,158.

Table 3-2: Industrial Employment by Sector

Industrial Sector	% Dist. In County (2000)
Agriculture, forestry, fishing, hunting, and mining	10.4
Construction	6.3
Manufacturing	13.1
Wholesale trade	5.9
Retail trade	9.0
Transportation, warehousing and utilities	6.7
Information	1.4
Finance, insurance, real estate, and rental/leasing	2.7
Professional, technical services	4.7
Educational, health and social services	22.6
Arts, entertainment, recreation	6.7
Public administration	5.7

Source: American FactFinder, 2000

3.5 Industry

Schuyler County's major employers and number of employees are listed in Table 3-3.

Table 3-3: Major Employers

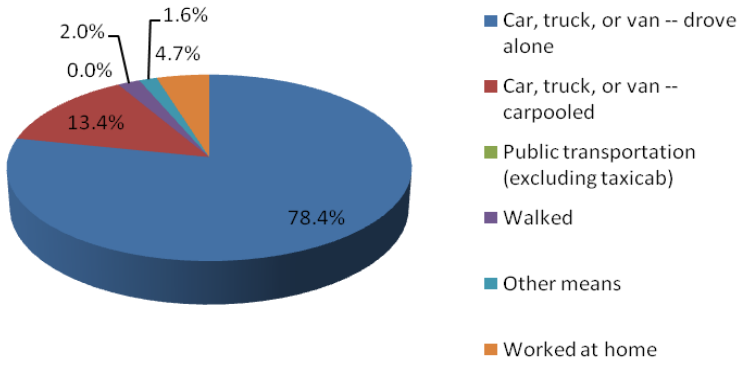
Company Name	City/Town	Year Established	# of Employees	Type of Business
Manufacturing				
Two Rivers FS, Inc.	Rushville	1986	70	Feed-Manufacturers
Bartlow Brothers	Rushville	1984	50	Meat Packers-Manf.
Oil Filter Recyclers, Inc.	Astoria	2002	75	Oil Recovery
Health Care				
Culbertson Memorial Hospital	Rushville	1984	180	Hospital
Snyder's Vaughn-Haven, Inc.	Rushville	1984	70	Long Term Care Facility
Other				
GM Sipes Construction, Inc.	Rushville	1993	250	General Contractors
Schuyler-Industry CUSD #5	Rushville	1987	115	Schools
Two Rivers FS Inc.	Rushville	1990	100	Farm Service

Source: Schuyler County Planning Team

Commuter Patterns

According to American FactFinder information from 2000, approximately 3,560 of Schuyler County's population are in the work force. The average travel time from home to work is 21.8 minutes. Figure 3-2 depicts the commuting patterns for Schuyler County's labor force.

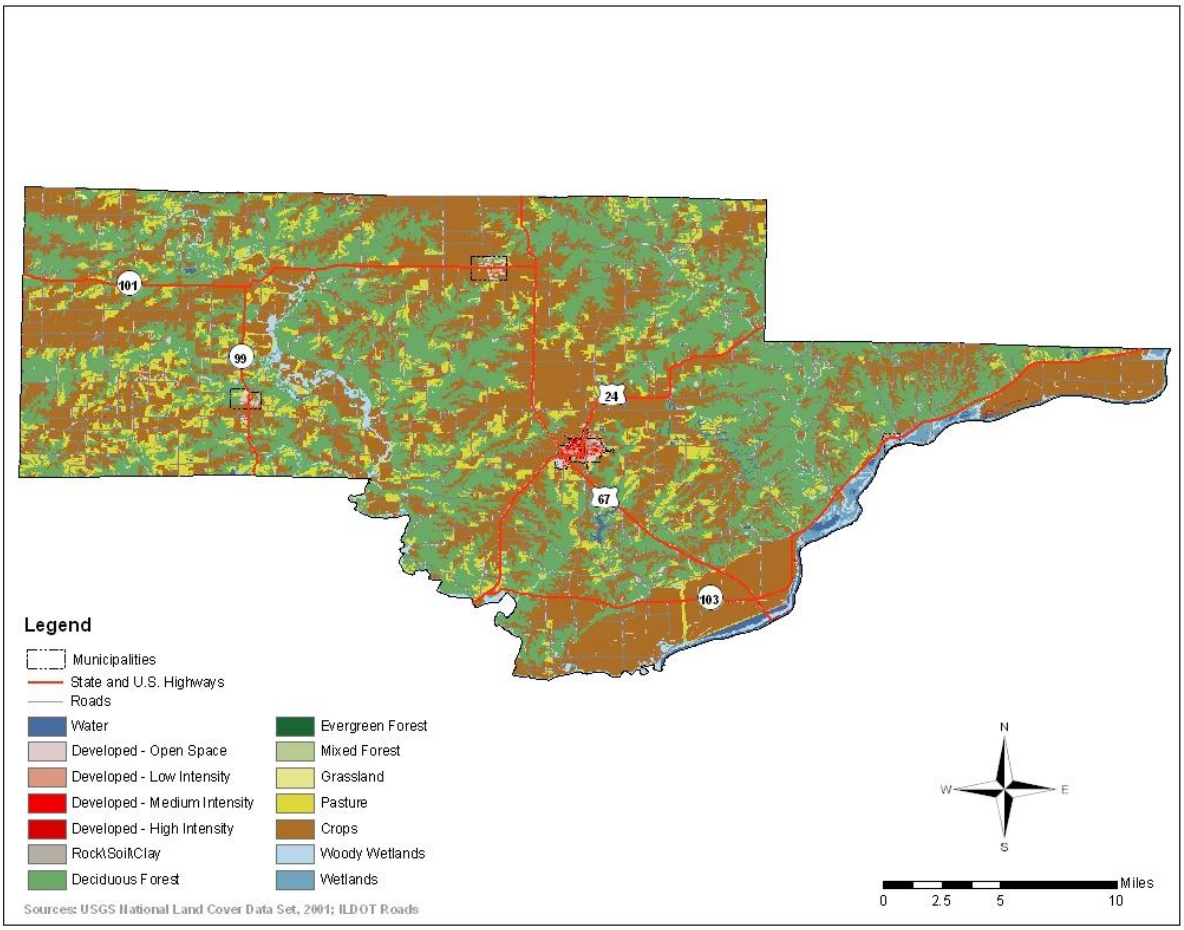
Figure 3-2: Commuter Patterns for Schuyler County



3.6 Land Use and Development Trends

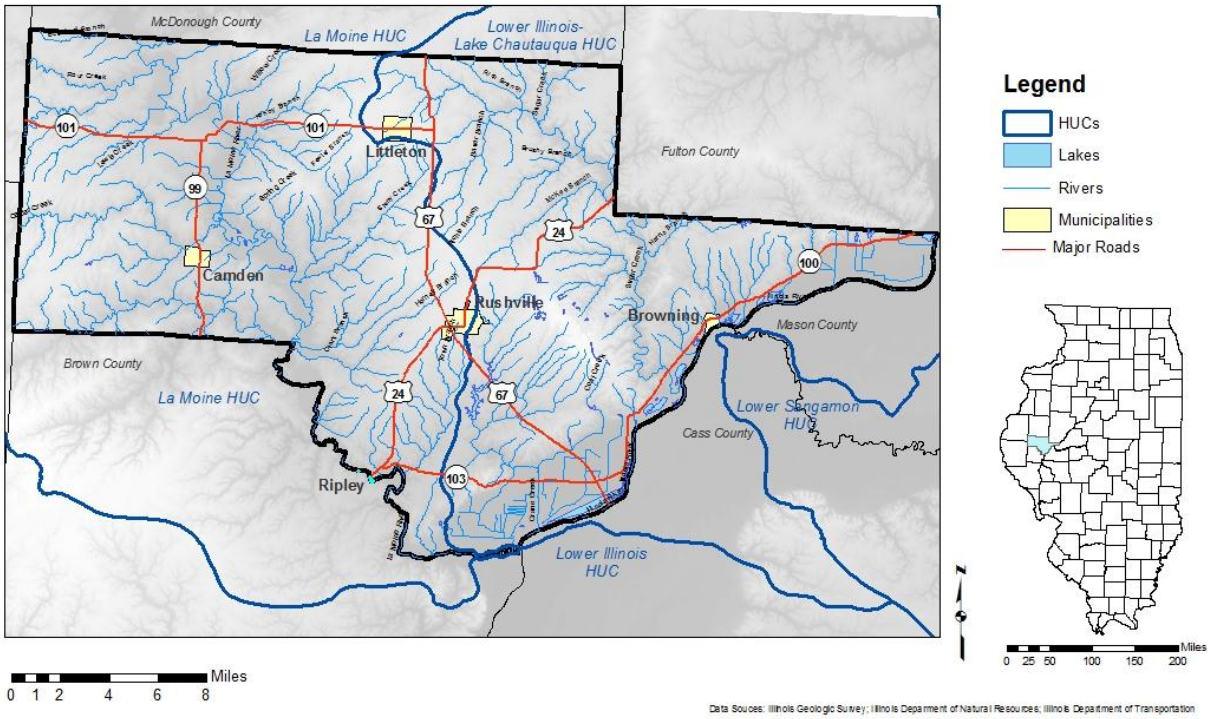
Agriculture is the predominant land use in Schuyler County with over 50% of the land devoted to crops and pasture. Other significant land uses include manufacturing, residential, and tourism (Figure 3-3). Schuyler County is home to several spacious parks for fishing, camping, hiking, and water sports. The parks include Schuy-Rush Park, Schuyler County Fairground, and Weinborg-King State Park.

Figure 3-3: Land use in Schuyler County



3.7 Major Lakes, Rivers, and Watersheds

Schuyler County has a number of bodies of water including Musick Pond, McCormick Pond, Schuy-Rush Lake, Big Lake, Little Lake, Curry Lake, Dutchmans Lake, Emmanuel Lake, and Sugar Creek Lake. It is also bounded by the Illinois River to the southeast. According to the USGS, Schuyler County consists of two drainage basins: La Moine (HUC 07130010) and the Lower Illinois-Lake Chautauqua (HUC 7130003).


McDonough County
La Moine HUC
Lower Illinois-
Lake Chautauqua HUC
Fulton County
Littleton
Camden
Rushville
Browning
Mason County
Brown County
La Moine HUC
Lower Sangamon
HUC
Cass County
Ripley
Lower Illinois
HUC
101
99
67
24
100
103
Legend
HUCs
Lakes
Rivers
Municipalities
Major Roads
N
Miles
0 1 2 4 6 8
Miles
0 25 50 100 150 200
Data Souces: Illinois Geologic Survey; Illinois Deparment of Natural Resources; Illinois Department of Transportation

Section 4 - Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on sound risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much of the community could be affected by a disaster, and the impact on community assets. A risk assessment consists of three components—hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification/Profile

4.1.1 Existing Plans

The plans identified in Table 1-3 did not contain a risk analysis. These local planning documents were reviewed to identify historical hazards and help identify risk. To facilitate the planning process, State and Federal climatologically, hydrologic, and geological data were used for the analysis and assessments within this section.

4.1.2 National Hazard Records

4.1.2.1 National Climatic Data Center (NCDC) Records

To assist the planning team, historical storm event data was compiled from the National Climatic Data Center (NCDC). NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to given weather events.

The NCDC data included 180 reported events in Schuyler County between March 14, 1957 and the October 31, 2009 (the most updated information as of the date of this plan). A summary table of events related to each hazard type is included in the hazard profile sections that follow. Pictures of some of the winter storm events are shown in Appendix D. Full details of individual hazard events can be found on the NCDC website. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail were plotted using SPC recorded latitude and longitude. These events are plotted and included as Appendix E. The list of NCDC hazards is included in Table 4-1.

Table 4-1: Climatic Data Center Historical Hazards

Hazard
Tornadoes
Severe Thunderstorms
Drought/Extreme Heat
Winter Storms
Flood/Flash flood

4.1.2.2 FEMA Disaster Information

Since 1965 there have been 55 Federal Disaster Declarations for the state of Illinois. Emergency declarations allow states access to FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Schuyler County has received federal aid for both PA and IA funding for 14 declared disasters since 1965. Figure 4-1 depicts the disasters and emergencies that have been declared for Schuyler County since 1965. Table 4-2 lists more specific information for each declaration that has occurred since 1965.

Figure 4-1: FEMA-Declared Emergencies and Disasters in Schuyler County (1965-present)

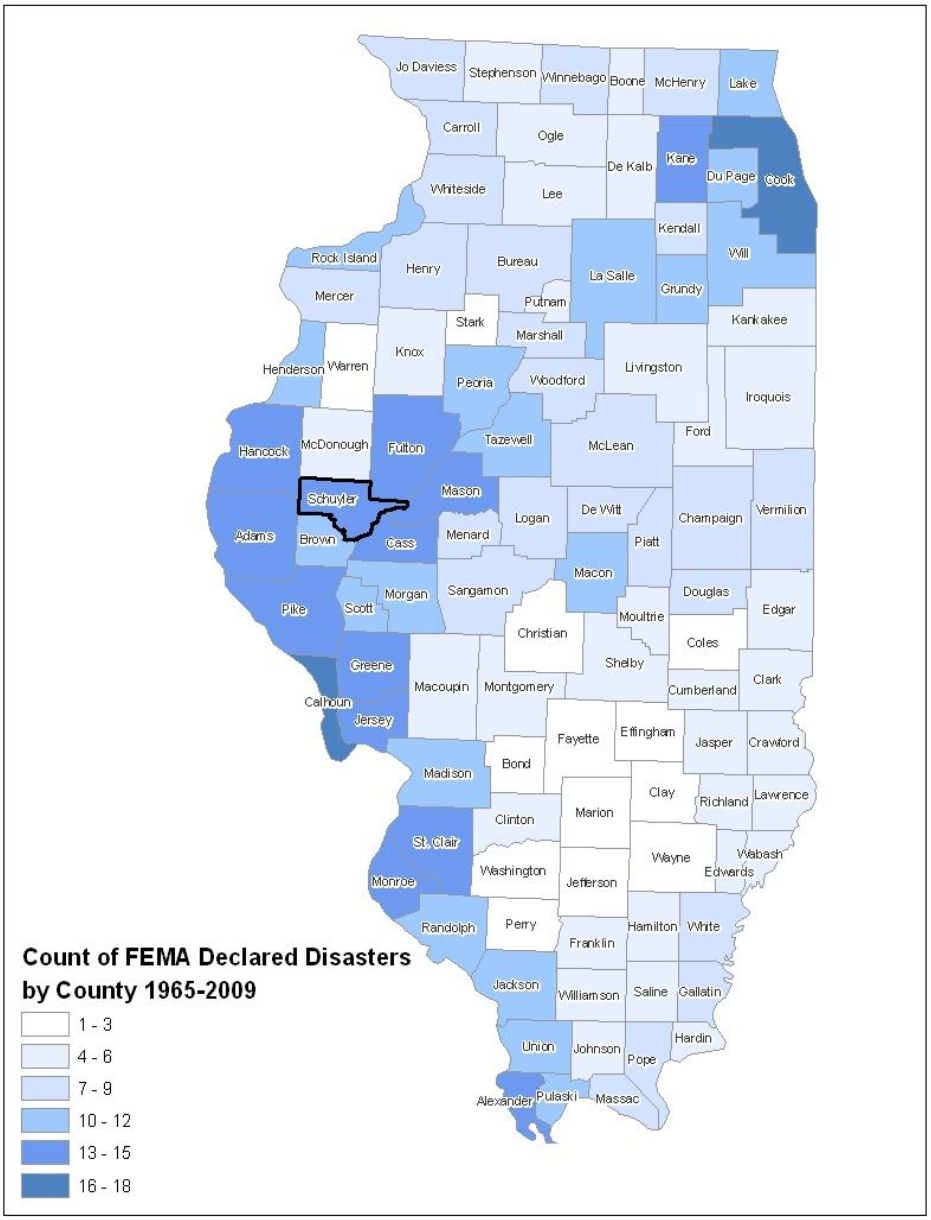


Table 4-2: FEMA-Declared Emergencies in Schuyler County (1965-present)

Date of Incident	Declaration Number	Date of Declaration	Description	Type of Assistance
	373	5/14/1973	Severe Storms & Flooding	
	438	6/25/1974	Severe Storms & Flooding	
	583	1/20/1979	Severe Storms & Flooding	
6/21/1981	643	6/22/1981	Tornado	
12/2/1982	674	12/10/1981	Flooding	
2/23/1985	735	3/11/1985	Severe Storms & Flooding	
9/21/1986	776	10/8/1986	Flooding	
6/20/1990	871	7/3/1990	Tornadoes, Severe Storms & Flooding	
6/1/1993	997	8/30/1993	Flooding	
5/13/1995	1053	5/23/1993	Severe Storms & Flash Flooding	
5/6/1996	1112	5/10/1996	Severe Storms & Flooding	
1/1/1999	3134	1/4/1999	Snow Emergency	Public
5/7/2002	1416	6/2/2002	Flooding	Individual and Public
5/10/2003	1469	5/15/2003	Tornadoes, Severe Storms & Flooding	Individual

4.1.3 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-3 lists the hazards Schuyler County will address in this multi-hazard mitigation plan. In addition, these hazards ranked the highest based on the Risk Priority Index discussed in section 4.1.4.

Table 4-3: Planning Team Hazard List

Hazard
Flooding
Tornado
Fire/Explosion
Dam or Levee Failure
Thunderstorms/ High Winds/Hail/ Lightning
Winter Storms
Transportation Hazardous Material Release
Extreme Heat/Drought
Earthquake

4.1.4 Calculating the Risk Priority Index

The first step in determining the Risk Priority Index (RPI) was to have the planning team members generate a list of hazards which have befallen or could potentially befall their community. Next, the planning team members were asked to assign a likelihood rating based on the criteria and methods described in the following table. Table 4-4 displays the probability of the future occurrence ranking. This ranking was based upon previous history and the definition of hazard. Using the definitions given, the likelihood of future events is "Quantified" which results in the classification within one of the four "Ranges" of likelihood.

Table 4-4: Future Occurrence Ranking

Probability	Characteristics
4 - *Highly Likely*	Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.
3 - *Likely*	Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year.
2 - *Possible*	Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.
1 - *Unlikely*	Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.

Next, planning team members were asked to consider the potential magnitude/severity of the hazard according to the severity associated with past events of the hazard. Table 4-5 gives four classifications of magnitude/severity.

Table 4-5: Hazard Magnitude

Magnitude/Severity	Characteristics
8 - *Catastrophic*	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 - *Critical*	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 - *Limited*	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 - *Negligible*	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

Finally, the RPI was calculated by multiplying the probability by the magnitude/severity of the hazard. Using these values, the planning team member where then asked to rank the hazards. Table 4-6 identifies the RPI and ranking for each hazard facing Schuyler County.

Table 4-6: Schuyler County Hazards (RPI)

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Tornado	3 - Highly Likely	8 - Catastrophic	24	1
Flooding	3 - Likely	4 - Critical	12	2
Thunderstorms/High Winds/Hail/Lightning	4 - Highly Likely	4 - Critical	16	3
Levee/Dam Failure	3 - Likely	4 - Critical	12	4
Transportation Hazardous Materials Release	2 - Possible	2 - Limited	4	5
Winter Storm	2 - Possible	2 - Limited	4	6
Extreme Heat/Drought	2 - Possible	2 - Limited	4	7
Fire/Explosion	2 - Possible	2 - Limited	4	8
Earthquake	1 - Unlikely	4 - Critical	4	9

4.1.5 Jurisdictional Hazard Ranking

Because the jurisdictions in Schuyler County differ in their susceptibilities to certain hazards—for example, the village of Browning located on the Illinois River Floodplain is more likely to experience significant flooding than the village of Littleton which is located outside of any large stream's or river's floodplain which could potentially cause significant flooding—the hazards identified by the planning team were ranked by SIUC for each individual jurisdiction using the methodology outlined in Section 4.1.4. The SIUC rankings were based on input from the planning team members, available historical data, and the hazard modeling results described within this hazard mitigation plan. During the five-year review of the plan this table will be updated by the planning team to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-7 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern).

Table 4-7: Hazard Rankings by Jurisdiction

Jurisdiction	Hazard						
	Tornado	HAZMAT	Extreme Heat/Drought	Thunderstorms	Flooding	Winter Storms	Fire/Explosion
*Village of Browning	1	4	6	3	2	5	7
Village of Littleton	1	3	5	2	N/A	4	N/A
Village of Camden	1	N/A	4	2	5	3	6
City of Rushville	1	4	N/A	2	5	3	N/A

N/A = Not Applicable
*Hazards for this jurisdiction were ranked by SIU

4.1.6 GIS and HAZUS-MH

The third step in this assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. Where possible, the hazards were quantified using GIS analyses and HAZUS-MH. This process reflects a Level 2 approach to analyzing

hazards as defined for HAZUS-MH. The approach includes substitution of selected default data with local data. This process improved the accuracy of the model predictions.

HAZUS-MH generates a combination of site-specific and aggregated loss estimates depending upon the analysis options that are selected and the input that is provided by the user. Aggregate inventory loss estimates, which include building stock analysis, are based upon the assumption that building stock is evenly distributed across census blocks/tracts. Therefore, it is possible that overestimates of damage will occur in some areas while underestimates will occur in other areas. With this in mind, total losses tend to be more reliable over larger geographic areas than for individual census blocks/tracts. It is important to note that HAZUS-MH is not intended to be a substitute for detailed engineering studies. Rather, it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This documentation does not provide full details on the processes and procedures completed in the development of this project. It is only intended to highlight the major steps that were followed during the project.

Site-specific analysis is based upon loss estimations for individual structures. For flooding, analysis of site-specific structures takes into account the depth of water in relation to the structure. HAZUS-MH also takes into account the actual dollar exposure to the structure for the costs of building reconstruction, content, and inventory. However, damages are based upon the assumption that each structure will fall into a structural class, and structures in each class will respond in a similar fashion to a specific depth of flooding or ground shaking. Site-specific analysis is also based upon a point location rather than a polygon, therefore the model does not account for the percentage of a building that is inundated. These assumptions suggest that the loss estimates for site-specific structures as well as for aggregate structural losses need to be viewed as approximations of losses that are subject to considerable variability rather than as exact engineering estimates of losses to individual structures.

The following events were analyzed. The parameters for these scenarios were created through GIS, HAZUS-MH, and historical information to predict which communities would be at risk.

Using HAZUS-MH

1. 100-year overbank flooding
2. Earthquake scenarios

Using GIS

1. Tornado
2. Hazardous material release

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

4.2.1.1 Processes and Sources for Identifying Assets

The HAZUS-MH data is based on best available national data sources. The initial step involved updating the default HAZUS-MH data using State of Illinois data sources. At Meeting #1, the planning team members were provided with a plot and report of all HAZUS-MH critical facilities. The planning team took GIS data provided by SIU-Polis; verified the datasets using local knowledge, and allowed SIU-Polis to use their local GIS data for additional verification. SIUC GIS analysts made these updates and corrections to the HAZUS-MH data tables prior to performing the risk assessment. These changes to the HAZUS-MH inventory reflect a Level 2 analysis. This update process improved the accuracy of the model predictions.

The default HAZUS-MH data has been updated as follows:

- The HAZUS-MH defaults, critical facilities, and essential facilities have been updated based on the most recent available data sources. Critical and essential point facilities have been reviewed, revised, and approved by local subject matter experts at each county.
- The essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) have been applied to the HAZUS-MH model data. HAZUS-MH reports of essential facility losses reflect updated data.

Schuyler County provided Southern Illinois University with parcel boundaries and county Assessor records. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary. Each parcel point was linked to an Assessor record based upon matching parcel numbers. The generated building inventory points represent the approximate locations (within a parcel) of building exposure. The parcel points were aggregated by census block.

- The aggregate building inventory tables used in this analysis have not been updated. Default HAZUS-MH model data was used for the earthquake loss estimation.
- For the flood analysis, user-defined facilities were updated from the building inventory information provided by Schuyler County.

Parcel-matching results for Schuyler County are listed in Table 4-8.

Table 4-8: Parcel-Matching for Schuyler County

Data Source	Count
Assessor Records	8,643
County-Provided Parcels	8,719
Assessor Records with Improvements	4,159
Matched Parcel Points	4,159

The following assumptions were made during the analysis:

- The building exposure for flooding, tornado, and HAZMAT is determined from the Assessor records. It is assumed that the population and the buildings are located at the centroid of the parcel.
- The building exposure for earthquake used HAZUS-MH default data.
- The algorithm used to match county-provided parcel point locations with the Assessor records is not perfect. The results in this analysis reflect matched parcel records only. The parcel-matching results for Schuyler County are included in Table 4-8.
- Population counts are based upon 2.5 persons per household. Only residential occupancy classes are used to determine the impact on the local population. If the event were to occur at night, it would be assumed that people are at home (not school, work, or church).
- The analysis is restricted to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.

4.2.1.2 Essential Facilities List

Table 4-9 identifies the essential facilities that were added or updated for the analysis. Essential facilities are a subset of critical facilities. A map and list of all critical facilities is included as Appendix F.

Table 4-9: Essential Facilities List

Facility	Number of Facilities
Care Facilities	4
Emergency Operations Centers	2
Fire Stations	5
Police Stations	3
Schools	5

4.2.1.3 Facility Replacement Costs

Facility replacement costs and total building exposure are identified in Table 4-10. The replacement costs have not been updated by local data. Table 4-10 also includes the estimated number of buildings within each occupancy class.

Table 4-10: Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Agricultural	28	$12,791
Commercial	129	$53,631
Education	5	$6,829
Government	13	$3,334
Industrial	31	$12,303

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Religious/Non-Profit	13	$10,638
Residential	3,395	$350,722
Total	**3,614**	**$450,248**

4.3 Future Development

As the county's population continues to grow, the residential and urban areas will extend further into the county, placing more pressure on existing transportation and utility infrastructure while increasing the rate of farmland conversion; Schuyler County will address specific mitigation strategies in Section 5 to alleviate such issues.

Because Schuyler County is vulnerable to a variety of natural and technological threats, the county government—in partnership with state government—must make a commitment to prepare for the management of these types of events. Schuyler County is committed to ensuring that county elected and appointed officials become informed leaders regarding community hazards so that they are better prepared to set and direct policies for emergency management and county response.

4.4 Hazard Profiles

4.4.1 Tornado Hazard

Hazard Definition for Tornado Hazard

Tornadoes pose a great risk to Illinois and its citizens. Tornadoes can occur at any time during the day or night. They can also happen during any month of the year. The unpredictability of tornadoes makes them one of the state's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area—a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as violently-rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently-rotating column of air can reach the ground very quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. The tornado scale ranges from low intensity F0 with effective wind speeds of 40 to 70 miles per hour to F5 tornadoes with effective wind speeds of over 260 miles per hour. The Fujita intensity scale is described in Table 4-11.

Table 4-11: Fujita Tornado Rating

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 *Gale*	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
1 *Moderate*	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 *Significant*	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 *Severe*	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 *Devastating*	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 *Incredible*	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Source: NOAA Storm Prediction Center

Previous Occurrences for Tornado Hazard

There have been several occurrences of tornadoes within Schuyler County during the past few decades. The NCDC database reported sixteen tornadoes/funnel clouds in Schuyler County since 1959. These tornados have been attributed with one death, 12 injuries, and $3.1 million dollars in property damage. The most recent recorded event occurred on May 2, 2004, when a funnel cloud briefly touched down in a field northwest of Huntsville.

Schuyler County NCDC recorded tornadoes are identified in Table 4-12. Pictures of some of the historical tornado events are shown in Appendix D. Additional details of individual hazard events can be found on the NCDC website.

Table 4-12: Schuyler County Tornadoes*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Schuyler County	3/14/1957	Tornado	F2	0	0	25K	0
Schuyler County	12/4/1973	Tornado	F1	0	0	0	0
Schuyler County	6/21/1974	Tornado	F1	0	0	0	0
Schuyler County	6/8/1981	Tornado	F0	0	0	0	0
Schuyler County	6/21/1981	Tornado	F3	1	12	2.5M	0
Schuyler County	5/30/1982	Tornado	F0	0	0	0	0
Schuyler County	3/27/1985	Tornado	F1	0	0	3K	0
Schuyler County	3/8/1990	Tornado	F2	0	0	250K	0
Schuyler County	11/27/1990	Tornado	F2	0	0	250K	0
Littleton	5/12/1998	Tornado	F0	0	0	0	0
Camden	6/14/1998	Tornado	F0	0	0	0	0
Pleasant View	6/14/1998	Tornado	F0	0	0	0	0
Rushville	6/1/1999	Tornado	F0	0	0	60K	0
Rushville	5/10/2003	Tornado	F0	0	0	0	0
Rushville	5/10/2003	Tornado	F2	0	0	0	0
Huntsville	5/2/2004	Tornado	F0	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk for occurrence of tornadoes. They can occur at any location within the county.

Hazard Extent for Tornado Hazard

The historical tornadoes generally moved from northwest to southeast across the county. The extent of the hazard varies both in terms of the extent of the path and the wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the probability of future tornadoes in Schuyler County is likely. Tornadoes with varying magnitudes are expected to happen. According to the RPI, tornadoes ranked as the number one hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	8	=	**24**

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Schuyler County are discussed in Table 4-9.

Critical Facilities

All critical facilities are vulnerable to tornadoes. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts will vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

The building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g. damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a tornado the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a tornado. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

An example scenario is described as follows to gauge the anticipated impacts of tornadoes in the county, in terms of numbers and types of buildings and infrastructure.

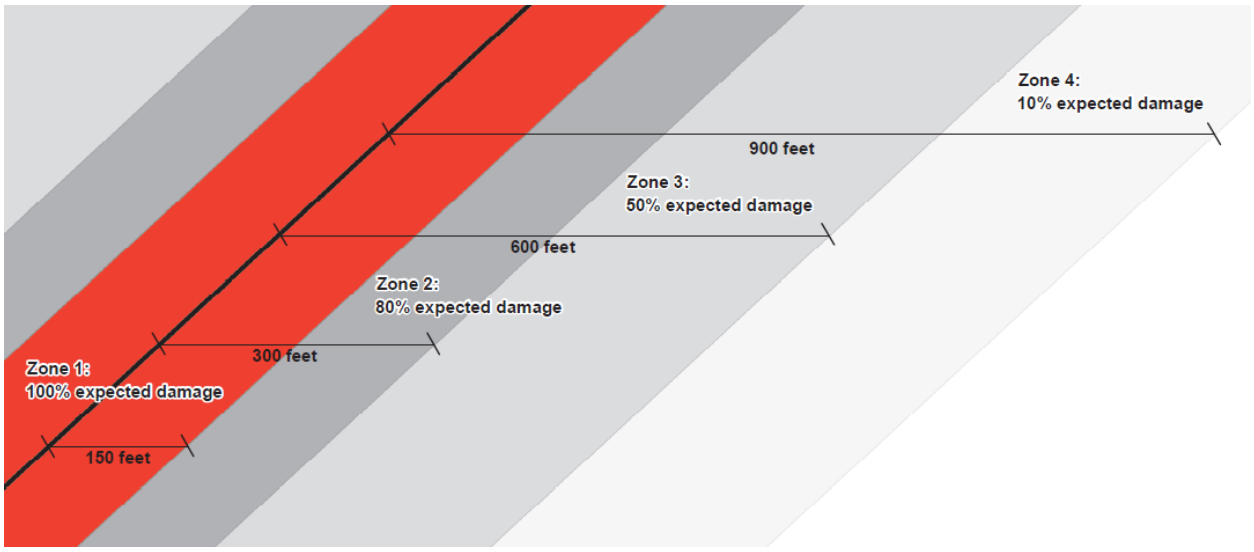
GIS overlay modeling was used to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon the F4 tornado event that ran for approximately 30 mile through Camden and Rushville. The selected widths were modeled after a recreation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these six categories. Table 4-13 depicts tornado damage curves as well as path widths.

Table 4-13: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path with decreasing amounts of damage away from the center. After the hypothetical path is digitized on a map the process is modeled in GIS by adding buffers (damage zones) around the tornado path. Figure 4-2 and Table 4-14 describe the zone analysis. The selected hypothetical tornado path is depicted in Figure 4-3, and the damage curve buffers are shown in Figures 4-4 and 4-5.

Figure 4-2: F4 Tornado Analysis Using GIS Buffers



An F4 tornado has four damage zones, depicted in Table 4-14. Total devastation is estimated within 150 feet of the tornado path. The outer buffer is 900 feet from the tornado path, within which buildings will experience 10% damage.

Table 4-14: F4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-3: Hypothetical F4 Tornado Path in Schuyler County

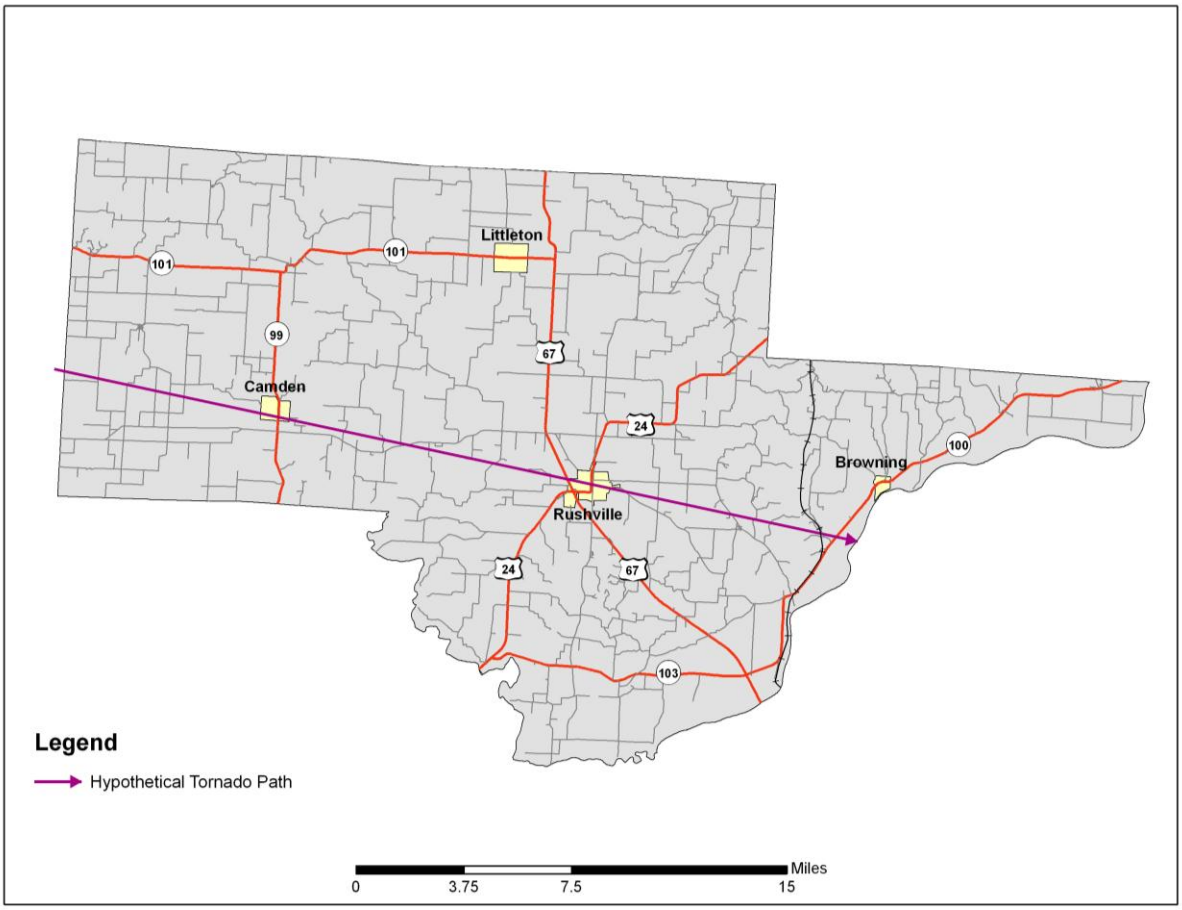


Figure 4-4: Modeled F4 Tornado Damage Buffers in Schuyler County near Rushville.

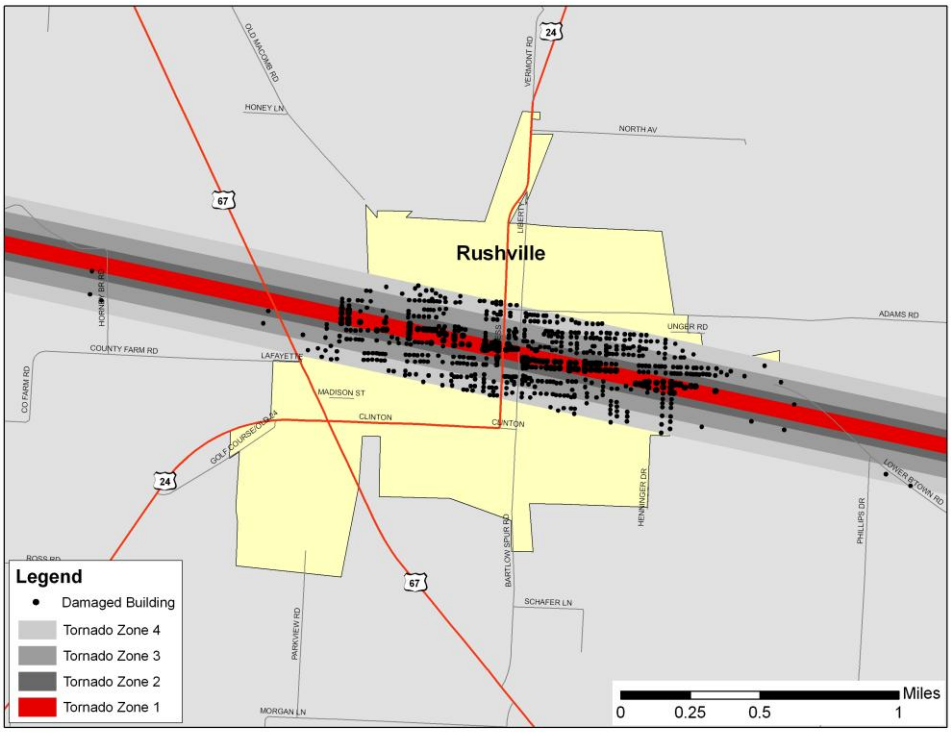
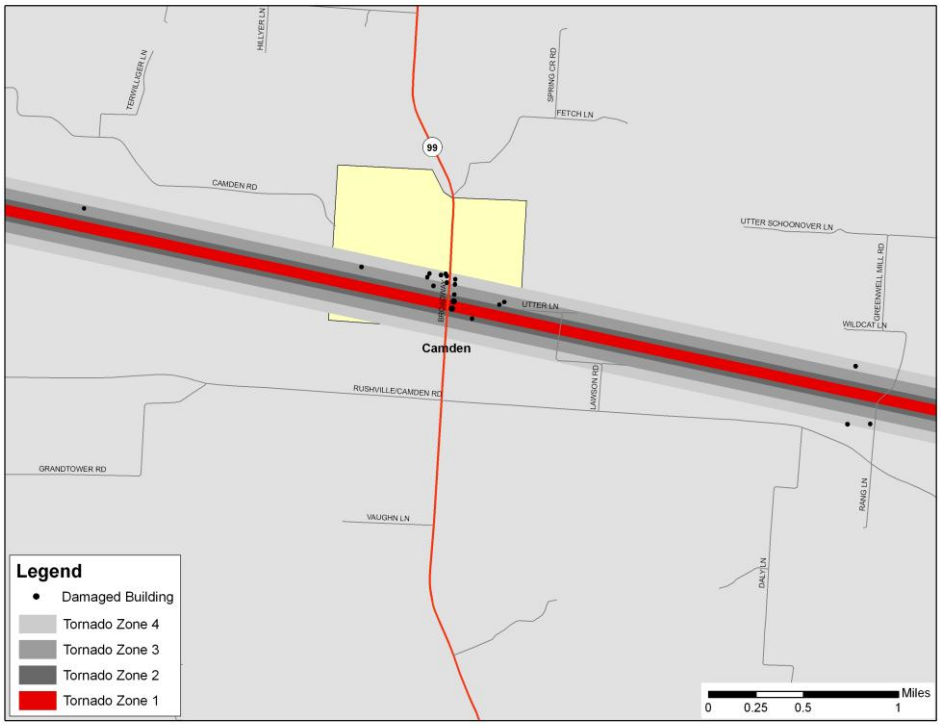


Figure 4-5: Modeled F4 Tornado Damage Buffers in Schuyler County near Camden.



The results of the analysis are depicted in Tables 4-15 and 4-16. The GIS analysis estimates that 705 buildings will be damaged. The estimated building losses were $40 million. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Schuyler County that were joined with Assessor records showing property improvement.

The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable. For purposes of analysis, the total number of buildings and the building replacement costs for government, religious/non-profit, and education should be lumped together.

Table 4-15: Estimated Numbers of Buildings Damaged by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	86	81	188	159
Commercial	45	29	42	32
Industrial	0	0	0	0
Agriculture	3	5	13	12
Religious	0	0	1	4
Government	2	0	1	0
Education	0	1	1	0
Total	**136**	**116**	**246**	**207**

Table 4-16: Estimated Building Losses by Occupancy Type (X 1000)

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$6,137,330	$5,667,019	$6,435,824	$1,221,679
Commercial	$3,773,454	$3,021,806	$2,469,588	$564,358
Industrial	$0	$0	$744,000	$3,720,000
Agriculture	$186,546	$143,669	$481,566	$158,134
Religious	$0	$0	$0	$0
Government	$219,400	$0	$1,243,200	$0
Education	$0	$1,450,000	$2,448,800	$0
Total	**$10,316,730**	**$10,282,494**	**$13,822,978**	**$5,664,171**

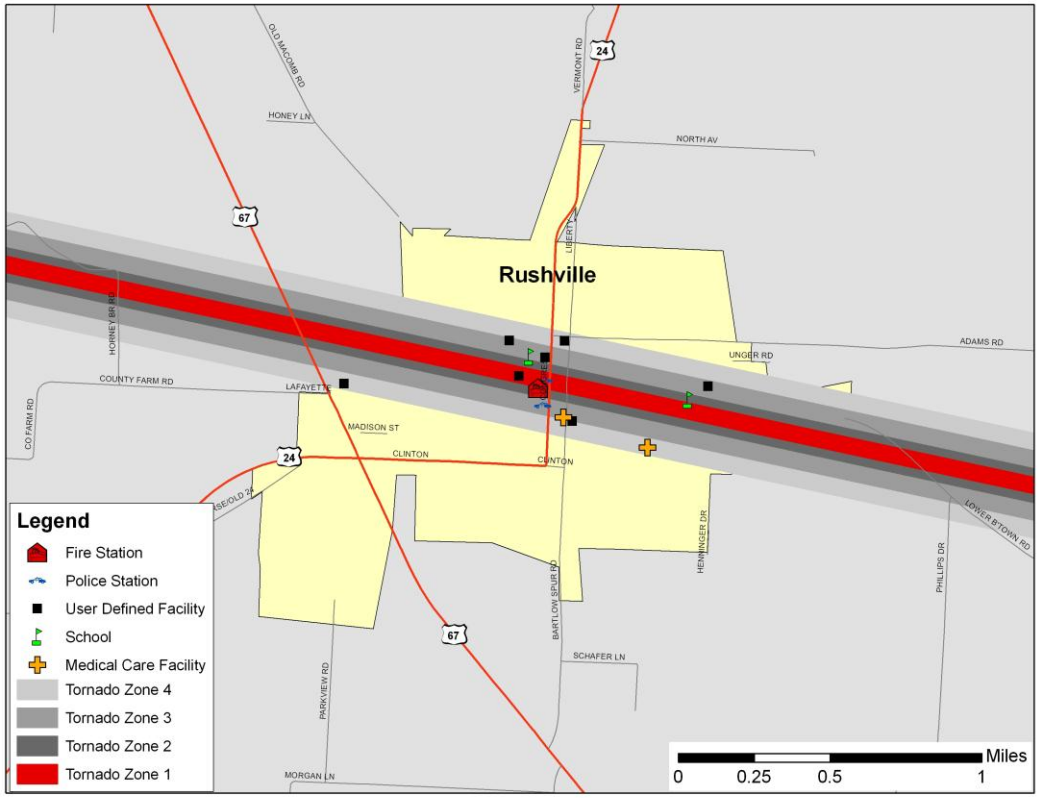
Critical Facilities Damage

There are 14 critical and user defined facilities located within 900 feet of the hypothetical tornado path. The affected facilities are identified in Table 4-17, and their geographic locations are shown in Figure 4-6.

Table 4-17: Estimated Essential Facilities Affected

Name
Care Facilities
Synder's Vaughn Haven
Schuyler County Public Health Department
Fire Stations
Rushville Fire Department
Police Stations
Rushville Police
Schuyler County Sheriff
School Facilities
Webster Elementary School
Washington Elementary
User Defined Facilities (Shelters)
1st United Methodist Church
Schuyler County Mental Health
Green Gables Motel
Nazarene Church
1st Southern Baptist Church
1st Christian Church
United Methodist Church

Figure 4-6: Essential Facilities within Tornado Path in Rushville



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and buildings have been identified as at risk because tornadoes can occur anywhere within the state, at any time of the day, and during any month of the year. Furthermore, any future development in terms of new construction within the county will be at risk. The building exposure for Schuyler County is included in Table 4-10.

All critical facilities in the county and communities within the county are at risk. A map and list of all critical facilities is included as Appendix F.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warnings of approaching storms are also vital to preventing the loss of property and ensuring the safety of Schuyler County residents.

4.4.2 Flood Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of two types: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas in which they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at anytime of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Hazard Definition for Dam and Levee Failure

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities land-ward of the levee. Dams and levees can fail due to either 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it cannot hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added

infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.

Previous Occurrences for Flooding

The NCDC database reported 22 flood events in Schuyler County since 1995. Flooding events have been attributed with one death, four injuries and over a million dollars in property damage. The most recent event occurred in May, 2009, when heavy rain of 2 to 4 inches fell within two to three hours and caused widespread flash flooding in Schuyler County. The heavy rain caused nearly every rural road to be impassible and a large portion of Illinois 101 was closed due to flooding.

Schuyler County NCDC recorded floods are identified in Table 4-18. Pictures of some of the historical flooding events are shown in Appendix D. Additional details of individual hazard events can be found on the NCDC website.

Table 4-18: Schuyler County Previous Occurrences of Flooding*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Schuyler County	5/16/1995	Flash Flood	N/A	0	2	0	0
Countywide	5/8/1996	Flash Flood	N/A	0	0	250K	0
Countywide	7/11/2000	Flash Flood	N/A	0	0	0	0
Brooklyn	8/22/2001	Flash Flood	N/A	0	0	0	0
Countywide	5/12/2002	Flash Flood	N/A	0	0	0	0
North Portion	6/11/2002	Flash Flood	N/A	0	0	0	0
Rushville	6/13/2002	Flash Flood	N/A	0	0	0	0
Countywide	7/18/2003	Flash Flood	N/A	0	0	0	0
Countywide	5/24/2004	Flash Flood	N/A	0	0	0	0
Rushville	8/25/2004	Flash Flood	N/A	0	0	0	0
Doddsville	9/13/2008	Flash Flood	N/A	0	0	0	0
Rushville	12/27/2008	Flash Flood	N/A	0	0	0	0
Birmingham	5/13/2009	Flash Flood	N/A	0	0	0	0
Schuyler County	5/15/1995	Flood	N/A	0	2	500K	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Schuyler County	6/1/1995	Flood	N/A	0	0	270K	0
Statewide	2/21/1997	Flood	N/A	0	0	0	0
Statewide	3/1/1997	Flood	N/A	0	0	0	0
Statewide	1/10/1998	Flood	N/A	0	0	0	0
Statewide	2/15/1998	Flood	N/A	0	0	0	0
Statewide	2/27/1998	Flood	N/A	0	0	0	0
Statewide	5/12/2002	Flood	N/A	1	0	0	0
Statewide	6/1/2002	Flood	N/A	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Previous Occurrences for Dam and Levee Failure

According to the Schuyler County planning team, there are no records or local knowledge of any dam or certified levee failure in the county.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP, which has suffered flood loss damage on two occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is 25% of the market value of the structure at the time of each flood loss.

The Illinois Emergency Management Agency (IEMA) was contacted to determine the location of repetitive loss structures. Table 4-19 lists 2010 data for damages to these repetitive loss structures.

Table 4-19: Schuyler County Repetitive Loss Structures

Jurisdiction	Occupancy Type	Number of Losses	Mitigated
Village of Browning	Single Family	2	No
Village of Browning	Single Family	5	No
Village of Browning	Single Family	2	No
Village of Browning	Single Family	3	Yes
Village of Browning	Single Family	2	Yes
Village of Browning	Single Family	2	Yes
Village of Browning	Single Family	2	Yes
Village of Browning	Single Family	4	Yes
Village of Browning	Single Family	4	Yes
Village of Browning	Non Residential	2	No
Schuyler County	Single Family	2	Yes
Schuyler County	Single Family	4	Yes
Schuyler County	Non Residential	2	Yes

Geographic Location for Flooding

Most river flooding occurs in early spring and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Severe thunderstorms may cause flooding during the summer or fall, but tend to be localized. The primary source of river flooding in Schuyler County is the Wabash River.

Flash floods, brief heavy flows in small streams or normally dry creek beds, also occur within the county. Flash flooding is typically characterized by high-velocity water, often carrying large amounts of debris. Urban flooding involves the overflow of storm drain systems and is typically the result of inadequate drainage following heavy rainfall or rapid snowmelt.

DFIRM was used to identify specific stream reaches for analysis. The areas of riverine flooding are depicted on the map in Appendix E.

The National Oceanic and Atmospheric Administration (NOAA) Advanced Hydrologic Prediction Service provides information from gauge locations at points along various rivers across the United States. For Schuyler County, no data is provided. However, gage information for the Illinois River and La Moine are provided in Appendix F.

Geographic Location for Dam and Levee Failure

The National Inventory of Dams identified 20 dams in Schuyler County. The maps in Appendix F illustrate the locations of Schuyler County dams. Of these 20 dams, there are no high hazard dams, two significant hazard dams, 17 low hazard dams and one dam in which the hazard class is unknown. One dam, Freeman United / Industry Impoundment along Willow Creek has emergency action plan (EAP). Table 4-20 summarizes the dam information.

Table 4-20: National Inventory of Dams

Dam Name	River	Hazard	EAP
Camp Immanuel Lake Dam	Tributary to Harris Branch Creek	L	N
McCormick Pond Dam	Tributary to Town Branch of the La Moine River	L	N
Peabody Lake	Tributary to Sugar Creek	L	N
Waddell Dam	Tributary to Willow Creek	L	N
Freeman United / Industry Impoundment 9	Willow Creek	L	Y
Coal and Crane Watershed Stream 15 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 13 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 12 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 19 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 8 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 7 Dam	NW Tributary - Bluff Ditch	L	NR
Coal and Crane Watershed Stream 6 Dam	West Tributary to the Illinois River	L	NR
Coal and Crane Watershed Stream 2 Dam	Coal Creek - Tributary to Bluff Ditch	L	NR
Coal and Crane Watershed Stream 2 Dam	Thurman Branch Tributary to Coal Creek	L	NR
Schuyrush Lake Dam Coal and Crane Creek Stream 5	Crane Creek	S	NR
Croxton Pond Dam	Tributary to Little Cedar Creek	L	N
Briney Pond Dam Number 1	Tributary to Elm Creek	L	N

Dam Name	River	Hazard	EAP
Gill Pond Dam #2	Tributary to S. Branch of Sugar Creek	L	NR
Roger Briney Pond # 2	Tributary to Illinois River	S	NR
Dam of Willow Creek	Willow Creek		

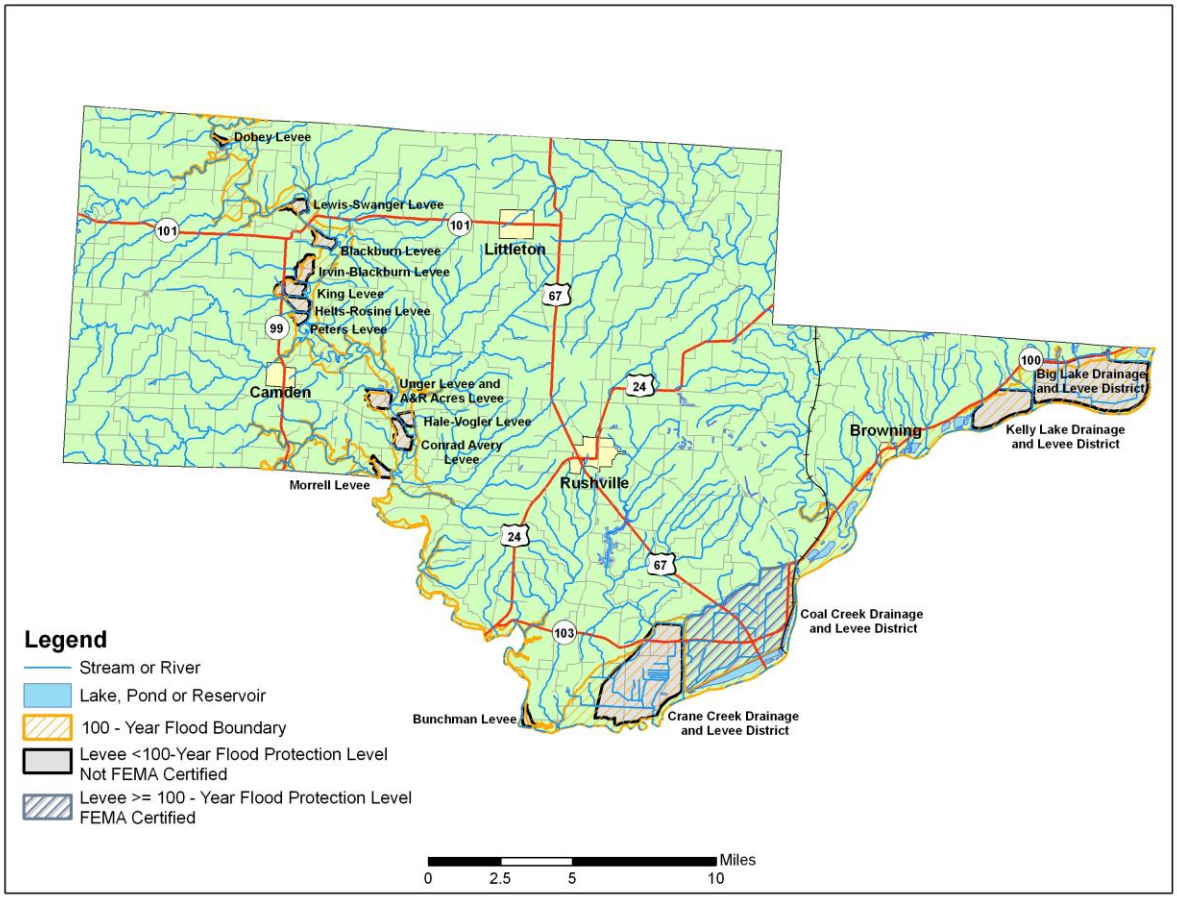
* The dams listed in this multi-hazard mitigation plan are recorded from default HAZUS-MH data. Their physical presences were not confirmed; therefore, new or unrecorded structures may exist. A more complete list of locations and attributes is included in Appendix F. L= Low Hazard Dam, S = Significant Hazard Dam, Y = Yes, N = No, NR = not required.

A review of the United States Army Corps of Engineers and local records revealed 17 levees within Schuyler County. Four of these levees are located along the Illinois River and thirteen line the La Moine River. Of these 17 levees, only the Coal Creek and Drainage and Levee District Levee is certified to at least the 100-year flood protection level. The 16 other levees in the County are agricultural levees which have protection levels that range from 5 to <100-year flood event. Table 4-21 listed the levees and their approximate locations are shown of Figure 4-7.

Table 21: List of Levees in Schuyler County

Name	River	Sponsorship	Area Protected (Acres)	Protection Level	Certification	
					PL 84 99 (USACE)	FEMA
Big Lake Drainage and Levee District Levee	Illinois	Big Lake Drainage and Levee District Levee	3,290	Unknown	Yes	No
Kelly Lake Drainage and Levee District	Illinois	Kelly Lake Drainage and Levee District	1,200	Unknown	No	No
Coal Creek Drainage and Levee District	Illinois	Coal Creek Drainage and Levee District	6,800	≥ 100-year	Yes	Yes
Crane Creek Drainage and Levee District	Illinois	Crane Creek Drainage and Levee District	5,240	Unknown	Yes	No
Dobey Levee	La Moine	Private	170	5	No	No
Lewis-Swanger Levee	La Moine	Private	243	10	No	No
Blackburn Levee	La Moine	Private	230	10	No	No
Irvin-Blackburn Levee	La Moine	Private	300	10	No	No
King Levee	La Moine	Little Goose Lake Drainage and Levee District	190	10	No	No
Snyder Levee	La Moine	Private	60	10	No	No
Shelts-Rosine Levee	La Moine	Private	229	10	No	No
Peters Levee	La Moine	Private	110	10	No	No
Unger and A.R. & Acres Levee	La Moine	Private	220	10	No	No
Hale-Vogler Levee	La Moine	Private	162	10	No	No
Conrad-Avery Levee	La Moine	Private	325	10	No	No
Morrell Levee	La Moine	Private	179	10	No	No
Bunchman Levee	La Moine	Private	300	5	No	No

Figure 4-7 Location on Levees Within Schuyler County



Hazard Extent for Flooding

The HAZUS-MH flood model is designed to generate a flood depth grid and flood boundary polygon by deriving hydrologic and hydraulic information based on user-provided elevation data or by incorporating selected output from other flood models. HAZUS-MH also has the ability to clip a Digital Elevation Model (DEM) with a user-provided flood boundary, thus creating a flood depth grid. For Schuyler County, HAZUS-MH was used to extract flood depth by clipping the DEM with the DFIRMs Base Flood Elevation (BFE) boundary. The BFE is defined as the area that has a 1% chance of flooding in any given year.

Hazard Extent for Dam and Levee Failure

When dams are assigned the low (L) hazard potential classification, it means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner's property. Dams assigned the significant (S) hazard classification are those dams in which failure or incorrect operation results in no probable loss of human life; however it can cause economic loss, environment damage, and disruption of lifeline facilities. Dams classified as significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. Dams assigned the high (H) hazard potential classification

are those dams in which failure or incorrect operation has the highest risk to cause loss of human life and significant damage to buildings and infrastructure.

According to default HAZUS-MH data, one dam is classified as high hazard and three dams have Emergency Action Plans (EAP). An EAP is not required by the State of Illinois but is strongly recommended by the Illinois Department of Natural Resources.

Accurate mapping of the risks of flooding behind levees depends on knowing the condition and level of protection the levees actually provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps clearly reflect the flood protection capabilities of levees, and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually levee and drainage districts, communities, or in some cases private individuals or organizations—are responsible for ensuring that the levees they own are maintained according to their design. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the one-percent-annual chance flood.

Risk Identification for Flood Hazard

Based on historical information and the HAZUS-MH flooding analysis results, future occurrence of flooding in Schuyler County is highly likely. According to the Risk Priority Index (RPI), flooding ranked as the number two hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	4	=	12

Risk Identification for Dam/Levee Failure

Based on operation and maintenance requirements and local knowledge of the dams and levees in Schuyler County, the probability of failure is likely. However, if a high hazard dam or levee were to fail, the magnitude and severity of the damage could be great. The warning time and duration of the dam or levee failure event would be very short. According to the RPI, dam and levee failure ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	4	=	12

HAZUS-MH Analysis Using 100-Year Flood Boundary and County Parcels

HAZUS-MH generated the flood depth grid for a 100-year return period by clipping the USGS 1/3 ArcSecond (approximately 10 meters) Digital Elevation Model (DEM) to the Schuyler

County flood boundary. Next, HAZUS-MH utilized a user-defined analysis of Schuyler County with site-specific parcel data provided by the county.

HAZUS-MH estimates the 100-year flood would damage 87 buildings at a replacement cost of $3.4 million. The total estimated numbers of damaged buildings are given in Table 4-22. Figure 4-8 depicts the Schuyler County parcel points that fall within the 100-year floodplain. Figure 4-9 highlights damage buildings within the Illinois River Floodplain near Browning.

Table 4-22: Schuyler County HAZUS-MH Building Damage

General Occupancy	Number of Buildings Damaged	Total Building Damage (x1000)
Residential	28	$190
Commercial	11	$311
Industrial	0	$0
Agricultural	48	$2,921
Religious	0	$0
Government	0	$0
Education	0	$0
Total	**87**	**$3,422**

Figure 4-8: Schuyler County Buildings in Floodplain (100-Year Flood)

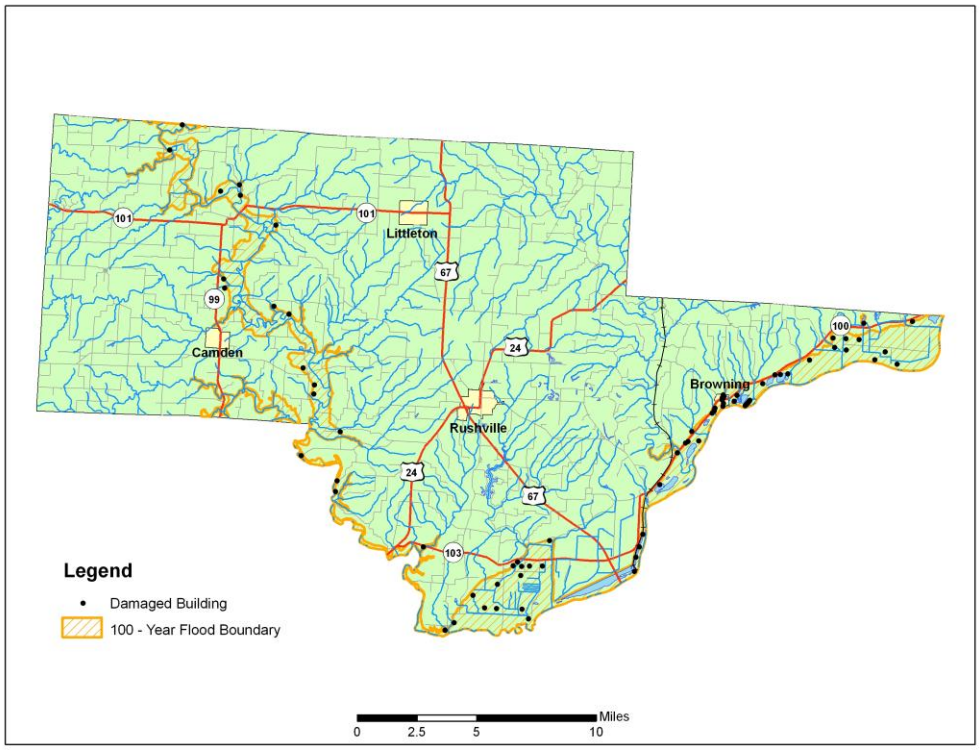
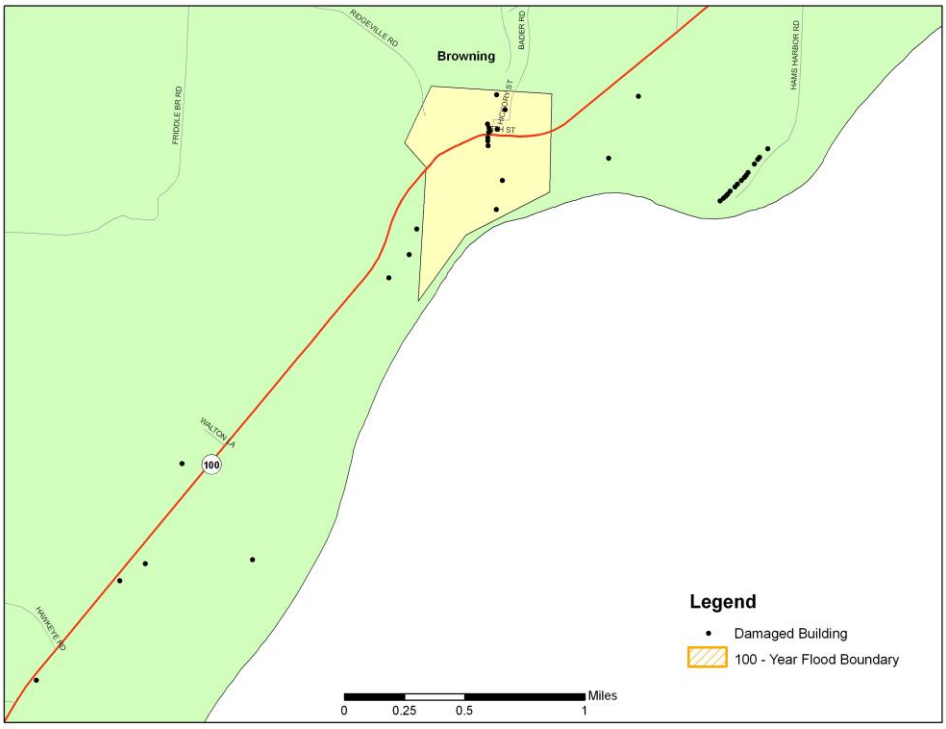


Figure 4-9: Schuyler County Flood-Prone Areas Near Browning (100-Year Flood)



Critical Facilities

A critical facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

The analysis identified no critical facilities within in the 100-year flood boundary in Schuyler County.

Infrastructure

The types of infrastructure that could be impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that any number of these items could become damaged in the event of a flood. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing traffic risks.

Vulnerability Analysis for Flash Flooding

Flash flooding could affect any low lying location within this jurisdiction; therefore, a significant portion of the county's population and buildings are vulnerable to a flash flood. These structures

can expect the same impacts as discussed in a riverine flood. A map and list of all critical facilities is included as Appendix F.

Vulnerability Analysis for Dam and Levee Failure

An EAP is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the "one-percent-annual chance" flood.

Vulnerability to Future Assets/Infrastructure for Flooding

Flash flooding may affect nearly every location within the county; therefore all buildings and infrastructure are vulnerable to flash flooding. Currently, the Schuyler County planning commission reviews new development for compliance with the local zoning ordinance. At this time no construction is planned within the area of the 100-year floodplain. Therefore, there is no new construction which will be vulnerable to a 100-year flood.

Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

The Schuyler County planning commission reviews new development for compliance with the local zoning ordinance.

Analysis of Community Development Trends

Controlling floodplain development is the key to reducing flood-related damages. Areas with recent development within the county may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible. Damage to these can cause the back up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.4.3 Earthquake Hazard

Hazard Definition for Earthquake Hazard

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped Earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake.

Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern United States. The most seismically active area in the Midwest is the New Madrid Seismic Zone. Scientists have learned that the New Madrid fault system may not be the only fault system in the Central U.S. capable of producing damaging earthquakes. The Wabash Valley fault system in Illinois and Indiana shows evidence of large earthquakes in its geologic history, and there may be other, as yet unidentified, faults that could produce strong earthquakes.

Ground shaking from strong earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area it may cause deaths, injuries, and extensive property damage.

The possibility of the occurrence of a catastrophic earthquake in the central and eastern United States is real as evidenced by history and described throughout this section. The impacts of significant earthquakes affect large areas, terminating public services and systems needed to aid the suffering and displaced. These impaired systems are interrelated in the hardest struck zones. Power lines, water and sanitary lines, and public communication may be lost; and highways, railways, rivers, and ports may not allow transportation to the affected region. Furthermore, essential facilities, such as fire and police departments and hospitals, may be disrupted if not previously improved to resist earthquakes.

As with hurricanes, mass relocation may be necessary, but the residents who are suffering from the earthquake can neither leave the heavily impacted areas nor receive aid or even communication in the aftermath of a significant event.

Magnitude, which is determined from measurements on seismographs, measures the energy released at the source of the earthquake. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment. Earthquake magnitudes and their corresponding intensities are listed in tables 4-23 and 4-24.

Source: http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

Table 4-23: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Table 4-24: Earthquake Magnitude vs. Modified Mercalli Intensity Scale

Earthquake Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	I
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - IX
7.0 and higher	VIII or higher

Previous Occurrences for Earthquake Hazard

Numerous instrumentally measured earthquakes have occurred in Illinois. In the past few decades, with many precise seismographs positioned across Illinois, measured earthquakes have varied in magnitude from very low microseismic events of M=1−3 to larger events up to M=5.4. Microseismic events are usually only detectable by seismographs and rarely felt by anyone. The most recent earthquake in northern Illinois—as of the date of this report—occurred on February 10, 2010 at 3:59:35 local time about 3.0 km (2 miles) east-northeast of Virgil, IL and measured 3.8 in magnitude.

The consensus of opinion among seismologists working in the Midwest is that a magnitude 5.0 to 5.5 event could occur virtually anywhere at any time throughout the region. Earthquakes occur in Illinois all the time, although damaging quakes are very infrequent. Illinois earthquakes causing minor damage occur on average every 20 years, although the actual timing is extremely variable. Most recently, a magnitude 5.2 earthquake shook southeastern Illinois on April 18,

2008, causing minor damage in the Mt Carmel, IL area. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years mainly in Southern Illinois.

Seismic activity on the New Madrid Seismic Zone of southeastern Missouri is very significant both historically and at present. On December 16, 1811 and January 23 and February 7 of 1812, three earthquakes struck the central U.S. with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment *(sand blows)* over an area of >10,500 km^2, and uplift of a 50 km by 23 km zone (the Lake County uplift). Shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historical earthquake).

The New Madrid earthquakes are especially noteworthy because the seismic zone is in the center of the North American Plate. Such intraplate earthquakes are felt, and do damage, over much broader areas than comparable earthquakes at plate boundaries. The precise driving force responsible for activity on the New Madrid seismic zone is not known, but most scientists infer that it is compression transmitted across the North American Plate. That compression is focused on New Madrid because it is the site of a Paleozoic structure—the Reelfoot Rift—which is a zone of weakness in the crust.

The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811–1812 type earthquakes (magnitude 7.5–8.0) is 7%–10% over the next 50 years (*USGS Fact Sheet 2006-3125*.) Frequent large earthquakes on the New Madrid seismic zone are geologically puzzling because the region shows relatively little deformation. Three explanations have been proposed: 1) recent seismological and geodetic activity is still a short-term response to the 1811–12 earthquakes; 2) activity is irregular or cyclic; or 3) activity began only in the recent geologic past. There is some dispute over how often earthquakes like the 1811–12 sequence occur. Many researchers estimate a recurrence interval of between 550 and 1100 years; other researchers suggest that either the magnitude of the 1811–12 earthquakes have been over-stated, or else the actual frequency of these events is less. It is fair to say, however, that even if the 1811–12 shocks were just magnitude ~7 events, they nonetheless caused widespread damage and would do the same if another such earthquake or earthquake sequence were to strike today.

[Above: New Madrid earthquakes and seismic zone modified from N. Pinter, 1993, Exercises in Active Tectonic history adapted from *Earthquake Information Bulletin*, 4(3), May-June 1972. *http://earthquake.usgs.gov/regional/states/illinois/history.php*]

The earliest reported earthquake in Illinois was in **1795**. This event was felt at Kaskaskia, IL for a minute and a half and was also felt in Kentucky. At Kaskaskia, subterranean noises were heard. Due to the sparse frontier population, an accurate location is not possible, and the shock may have actually originated outside the state.

An intensity VI-VII earthquake occurred on **April 12, 1883**, awakening several people in Cairo, IL. One old frame house was significantly damaged, resulting in minor injuries to the inhabitants. This is the only record of injury in the state due to earthquakes.

On **October 31, 1895** a large M6.8 occurred at Charleston, Missouri, just south of Cairo. Strong shaking caused eruptions of sand and water at many places along a line roughly 30 km (20 mi) long. Damage occurred in six states, but most severely at Charleston, with cracked walls,

windows shattered, broken plaster, and chimneys fallen. Shaking was felt in 23 states from Washington, D.C. to Kansas and from southernmost Canada to New Orleans, LA.

A Missouri earthquake on **November 4, 1905**, cracked walls in Cairo. Aftershocks were felt over an area of 100,000 square miles in nine states. In Illinois, it cracked the wall of the new education building in Cairo and a wall at Carbondale, IL.

Among the largest earthquakes occurring in Illinois was the **May 26, 1909** shock, which knocked over many chimneys at Aurora. It was felt over 500,000 square miles and strongly felt in Iowa and Wisconsin. Buildings swayed in Chicago where there was fear that the walls would collapse. Just under two months later, a second Intensity VII earthquake occurred on **July 18, 1909**, damaged chimneys in Petersburg, IL, Hannibal, MO, and Davenport, IA. Over twenty windows were broken, bricks loosened and plaster cracked in the Petersburg area. This event was felt over 40,000 square miles.

On **November 7, 1958**, a shock along the Indiana border resulted in damage at Bartelso, Dale and Maunie, IL. Plaster cracked and fell, and a basement wall and floor were cracked.

On **August 14, 1965**, a sharp but local shock occurred at Tamms, IL, a town of about 600 people. The magnitude 5 quake damaged chimneys, cracked walls, knocked groceries from the shelves, and muddied the water supply. Thunderous earth noises were heard. This earthquake was only felt within a 10 mile radius of Tamms, in communities such as Elco, Unity, Olive Branch, and Olmsted, IL. Six aftershocks were felt.

An earthquake of Intensity VII occurred on **November 9, 1968**. This magnitude 5.3 shock was felt over an area of 580,000 square miles in 23 states. There were reports of people in tall buildings in Ontario and Boston feeling the shock. Damage consisted of bricks being knocked from chimneys, broken windows, toppled television antenna, and cracked plaster. There were scattered reports of cracked foundations, fallen parapets, and overturned tombstones. Chimney damage was limited to buildings 30 to 50 years old. Many people were frightened. Church bells rang at Broughton and several other towns. Loud rumbling earthquake noise was reported in many communities.

Dozens of other shocks originating in Missouri, Arkansas, Kansas, Nebraska, Tennessee, Indiana, Ohio, Michigan, Kentucky, and Canada have been felt in Illinois without causing damage. There have been three earthquakes slightly greater than magnitude 5.0 and Intensity level VII which occurred in 1968, 1987 and 2008 and that were widely felt throughout southern Illinois and the midcontinent.

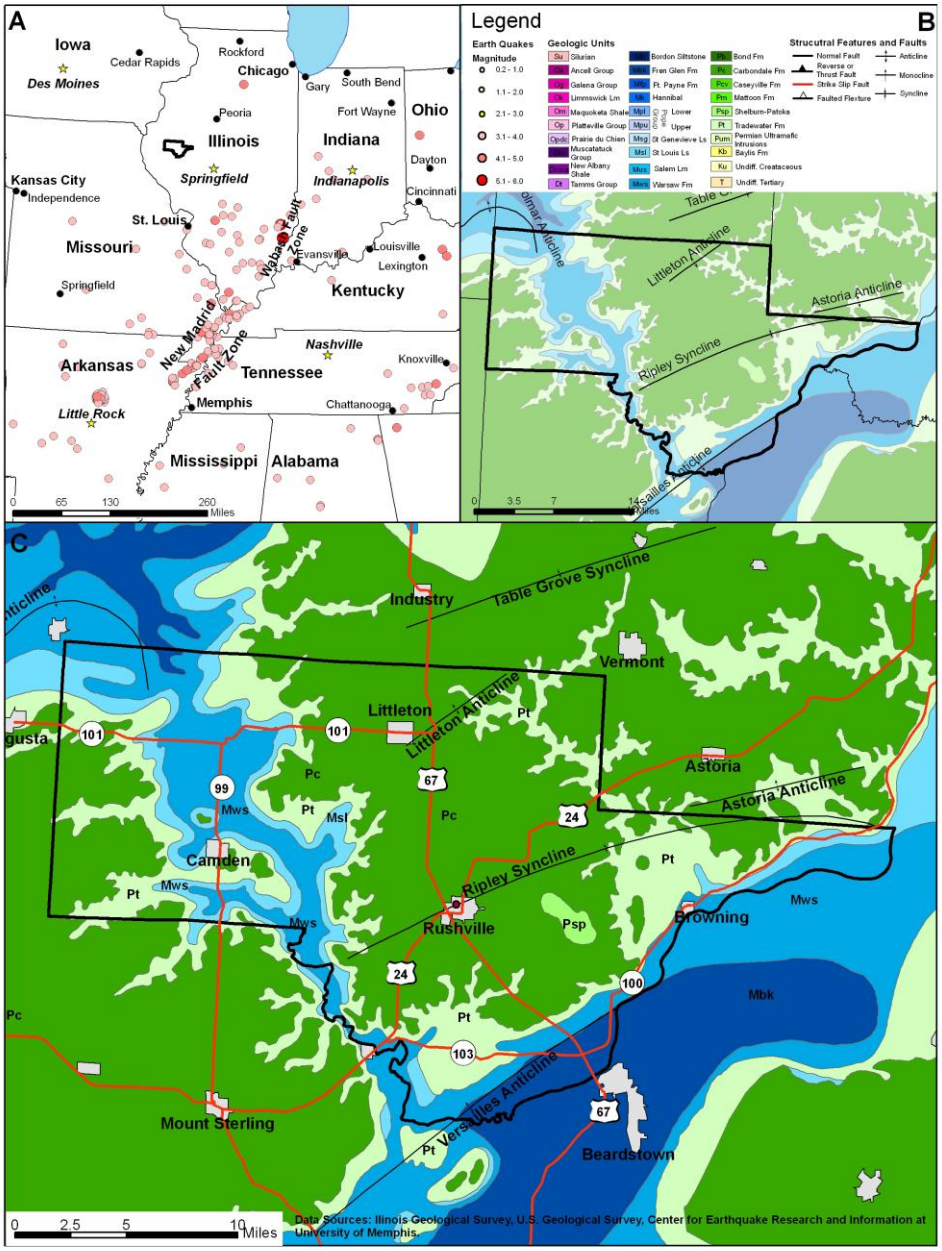
Above text adapted from http://earthquake.usgs.gov/regional/states/illinois/history.php and from Seismicity of the United States, 1568-1989 (Revised), C.W. Stover and J.L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993.

Geographic Location for Earthquake Hazard

Within Illinois, the two most significant zones of seismic activity are the New Madrid Seismic Zone and the Wabash Valley Fault System. There have been no earthquake epicenters recorded in Schuyler County since 1974.

Figure 4-10 depicts the following: a) Location of notable earthquakes in the Illinois region with inset of Schuyler County; b) Generalized geologic bedrock map with earthquake epicenters, geologic structures, and inset of Schuyler County; c) Geologic and earthquake epicenter map of Schuyler County.

Figure 4-10 a, b, c: Schuyler County Earthquakes



Hazard Extent for Earthquake Hazard

The extent of the earthquake is countywide. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. A National Earthquake Hazards Reduction Program (NEHRP) compliant soils map was used for the analysis which was provided by ISGS. The map identifies the soils most susceptible to failure.

Calculated Risk Priority Index for Earthquake Hazard

Based on historical information as well as current USGS and SIU research and studies, future earthquakes in Schuyler County are possible but, large earthquakes which would cause severe to catastrophic damage in the County are highly unlikely. Severe to catastrophic earthquake damage is unlikely because of the large distance (>200 miles) between Schuyler County and nearest the major seismic zones, the New Madrid Seismic Zone and the Wabash Valley Fault Zone. According to the Schuyler County planning team RPI assessment, earthquake is ranked as the number nine hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
1	x	4	=	4

Vulnerability Analysis for Earthquake Hazard

This hazard could impact the entire jurisdiction equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake and can expect the same impacts within the affected area. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g. damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable causing traffic risks. Typical scenarios are described to gauge the anticipated impacts of earthquakes in the county in terms of numbers and types of buildings and infrastructure.

The Polis-SIU team reviewed existing geological information and recommendations for earthquake scenarios. A deterministic and a probabilistic earthquake scenario were developed to provide a reasonable basis for earthquake planning in Schuyler County. The deterministic scenario was a moment magnitude of 5.5 with the epicenter located in Schuyler County near the city of Rushville. This represents a realistic scenario for planning purposes.

Additionally, the earthquake loss analysis included a probabilistic scenario based on ground shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude that would be typical of that expected for a 500-year return period.

The following earthquake hazard modeling scenarios were performed:

- 5.5 magnitude earthquake local epicenter
- 500-year return period event

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. Fortunately, a National Earthquake Hazards Reduction Program (NEHRP) soil classification map exists for Illinois. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking. FEMA provided a soils map and liquefaction potential map that was used by HAZUS-MH.

Earthquake hypocenter depths in Illinois range from less than 1.0 to ~25.0 km. The average hypocenter depth, ~10.0 km, was used for the deterministic earthquake scenario. For this scenario type HAZUS-MH also requires the user to define an attenuation function. To maintain consistency with the USGS's (2006) modeling of strong ground motion in the central United States, the Toro et al. (1997) attenuation function was used for the deterministic earthquake scenario.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the

earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for 5.5 Magnitude Earthquake in Schuyler County

The results of the initial analysis, the 5.5 magnitude earthquake with an epicenter in the City of Rushville, are depicted in Tables 4-25 and 4-26 and Figure 4-11. HAZUS estimates that approximately 554 buildings will be at least moderately damaged. This is more than 15% of the total number of buildings in the region. It is estimated that 20 buildings will be damaged beyond repair.

The total building related losses totaled $34.69 million; 16% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which comprised more than 65% of the total loss.

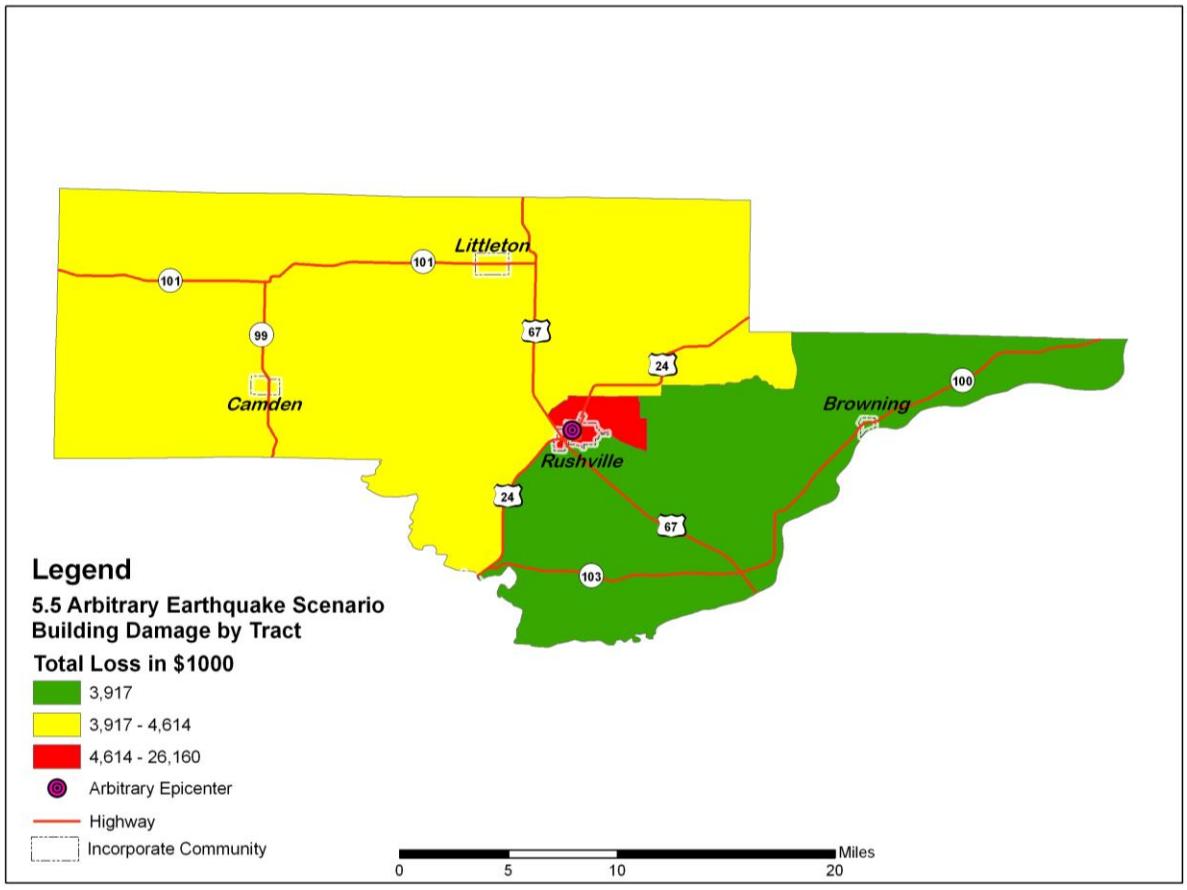
Table 4-25: Schuyler County 5.5M Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	16	0.71	5	0.66	5	1.08	2	1.63	0	1.28
Commercial	66	2.91	28	3.63	24	5.62	9	8.28	2	7.88
Education	4	0.17	2	0.22	2	0.38	1	0.56	0	0.74
Government	8	0.37	2	0.30	2	0.41	0	0.45	0	0.52
Industrial	17	0.76	6	0.80	5	1.22	2	1.73	0	1.49
Other Residential	425	18.60	201	25.83	159	37.08	35	33.63	5	24.50
Religion	7	0.30	3	0.36	2	0.53	1	0.84	0	0.98
Single Family	1,742	76.19	530	68.19	230	53.67	55	52.89	13	62.60
Total	**2,286**		**777**		**428**		**105**		**21**	

Table 4-26: Schuyler County 5.5M Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.22	0.74	0.01	0.08	1.05
	Capital-Related	0.00	0.09	0.62	0.01	0.03	0.74
	Rental	0.39	0.30	0.37	0.00	0.05	1.11
	Relocation	1.45	0.33	0.56	0.03	0.39	2.76
	Subtotal	**1.85**	**0.93**	**2.30**	**0.05**	**0.54**	**5.67**
Capital Stock Loses							
	Structural	1.97	0.55	0.75	0.08	0.55	3.91
	Non_Structural	9.08	2.87	2.51	0.42	1.47	16.36
	Content	4.36	1.00	1.80	0.31	1.09	8.57
	Inventory	0.00	0.00	0.08	0.06	0.05	0.18
	Subtotal	**15.42**	**4.43**	**5.14**	**0.87**	**3.16**	**29.02**
	Total	**17.26**	**5.36**	**7.44**	**0.93**	**3.70**	**34.69**

Figure 4-11: Schuyler County 5.5M Scenario-Building Economic Losses in Thousands of Dollars



Schuyler County 5.5M Scenario—Essential Facility Losses

Before the earthquake, the region had 157 care beds available for use. On the day of the earthquake, the model estimates that only 2 care beds (2%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 45% of the beds will be back in service. By day 30, 75% will be operational.

500-Year Probabilistic Scenario Results

The results of the 500-year probabilistic analysis are depicted in Tables 4-27 and 4-28. HAZUS-MH estimates that approximately 35 buildings will be at least moderately damaged. This is more than 1% of the total number of buildings in the region. It is estimated that seven buildings will be damaged beyond repair. The total building-related losses totaled $0.89 million; 32% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up more than 62% of the total loss.

Table 4-27: 500-Year Probabilistic Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	26	0.76	1	1.12	0	1.44	0	2.05	0	1.21
Commercial	122	3.50	5	5.03	2	5.79	0	8.16	0	5.54
Education	8	0.22	0	0.32	0	0.38	0	0.52	0	0.56
Government	12	0.36	0	0.42	0	0.47	0	0.58	0	0.64
Industrial	29	0.84	1	1.19	0	1.39	0	1.94	0	1.19
Other Residential	771	22.19	39	37.59	14	42.60	1	18.53	0	11.11
Religion	12	0.35	0	0.48	0	0.59	0	0.88	0	0.79
Single Family	2,496	71.79	56	53.86	15	47.34	2	67.34	0	78.96
Total	**3,477**		**104**		**32**		**3**		**0**	

Table 4-28: 500-Year Probabilistic Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.01	0.04	0.00	0.00	0.05
	Capital-Related	0.00	0.00	0.03	0.00	0.00	0.04
	Rental	0.02	0.01	0.02	0.00	0.00	0.06
	Relocation	0.07	0.02	0.03	0.00	0.02	0.14
	Subtotal	**0.09**	**0.04**	**0.12**	**0.00**	**0.03**	**0.28**
Capital Stock Loses							
	Structural	0.11	0.03	0.04	0.01	0.03	0.22
	Non_Structural	0.19	0.05	0.04	0.01	0.03	0.32
	Content	0.03	0.01	0.01	0.00	0.01	0.06
	Inventory	0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	**0.33**	**0.09**	**0.10**	**0.02**	**0.07**	**0.61**
	Total	**0.42**	**0.13**	**0.22**	**0.02**	**0.10**	**0.89**

500-Year Probabilistic Scenario—Essential Facility Losses

Before the earthquake, the region had 157 care beds available for use. On the day of the earthquake, the model estimates that only 95 care beds (18%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 98% of the beds will be back in service. By day 30, 100% will be operational.

Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, will accommodate earthquake mitigation design standards.

Analysis of Community Development Trends

Community development will occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction.

In Meeting #4, the MHMP team discussed specific mitigation strategies for potential earthquake hazards. The discussion included strategies to harden and protect future, as well as existing, structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication.

4.4.4 Thunderstorm Hazard

Hazard Definition for Thunderstorm Hazard

Severe thunderstorms are defined as thunderstorms with one or more of the following characteristics: strong winds, large damaging hail, or frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur any month of the year at any time of day. A severe thunderstorm's impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria.

- Hail of diameter 0.75 inches or higher
- Frequent and dangerous lightning
- Wind speeds equal to or greater than 58 miles per hour

Hail

Hail is a product of a strong thunderstorm. Hail usually falls near the center of a storm, however strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, but hailstones larger than softballs have been reported on rare occasions.

Lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but in reality lightning causes damage to many structures and kills or severely injures numerous people in the United States each year.

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are a fairly common occurrence across Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences for Thunderstorm Hazard

The NCDC database reported 31 hail storms in Schuyler County since 1972. The hailstorms have been attributed with over three quarters of a million dollars in property damage and four million dollars in crop damage in Schuyler County. Hail storms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was in May 2008 when scattered thunderstorms produced a few severe wind gusts and nickel to quarter size hail.

Schuyler County hail storms are identified in Table 4-29. Pictures of some of the historical thunderstorm events are shown in Appendix D. Additional details of individual hazard events can be found on the NCDC website.

Table 4-29: Schuyler County Hail Storms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Schuyler County	3/12/1972	Hail	1.00 in.	0	0	0	0
Schuyler County	8/13/1976	Hail	1.00 in.	0	0	0	0
Schuyler County	5/6/1986	Hail	0.88 in.	0	0	0	0
Schuyler County	5/21/1987	Hail	1.75 in.	0	0	0	0
Schuyler County	4/5/1988	Hail	0.75 in.	0	0	0	0
Schuyler County	10/4/1991	Hail	1.75 in.	0	0	0	0
Brooklyn	6/25/1994	Hail	0.75 in.	0	0	0	0
Camden	5/9/1995	Hail	0.75 in.	0	0	0	0
Camden/Littleton	4/18/1996	Hail	1.75 in.	0	0	0	0
Rushville/browning	4/18/1996	Hail	0.75 in.	0	0	0	0
Ray	4/19/1996	Hail	1.00 in.	0	0	0	0
Littleton	5/12/1998	Hail	4.50 in.	0	0	0	0
Frederick	6/28/1998	Hail	1.75 in.	0	0	0	0
Rushville	8/18/1999	Hail	2.75 in.	0	0	758K	4.0M
Rushville	2/29/2000	Hail	1.00 in.	0	0	0	0
Rushville	4/19/2000	Hail	0.75 in.	0	0	0	0
Brooklyn	8/17/2000	Hail	1.75 in.	0	0	0	0
Rushville	5/1/2002	Hail	1.75 in.	0	0	0	0
Camden	4/4/2003	Hail	0.75 in.	0	0	0	0
Camden	4/4/2003	Hail	1.00 in.	0	0	0	0
Rushville	5/8/2003	Hail	1.75 in.	0	0	0	0
Rushville	5/9/2003	Hail	0.75 in.	0	0	0	0
Huntsville	9/26/2003	Hail	0.88 in.	0	0	0	0
Huntsville	6/13/2005	Hail	1.25 in.	0	0	0	0
Littleton	6/13/2005	Hail	0.75 in.	0	0	0	0
Rushville	9/18/2005	Hail	0.88 in.	0	0	0	0
Ray	3/11/2006	Hail	1.00 in.	0	0	0	0
Brooklyn	3/11/2006	Hail	1.00 in.	0	0	0	0
Littleton	3/12/2006	Hail	0.75 in.	0	0	0	0
Brooklyn	3/13/2006	Hail	1.00 in.	0	0	0	0
Huntsville	5/13/2008	Hail	1.00 in.	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported no occurrences of significant lightning strikes in Schuyler County since 1959.

The NCDC database identified 65 wind storms reported since 1966, the most recent of which was reported in August 2009 when storms produced wind gusts between 60 and 70 miles per hour. These wind storms have been attributed with causing one death, four injuries, $1.3 million dollars in property damage and $2 million dollars in crop damage.

As shown in Table 4-30, wind storms have historically occurred year-round with the greatest frequency and damage between May and July. The following table includes available top wind speeds for Schuyler County.

Table 4-30: Schuyler County Wind Storms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Schuyler County	6/8/1966	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	10/14/1966	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	6/16/1973	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	7/5/1980	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	9/6/1980	Tstm Wind	52 kts.	0	0	0	0
Schuyler County	12/27/1982	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	7/2/1992	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	7/2/1992	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	7/2/1992	Tstm Wind	Not Measured	0	0	0	0
Brooklyn	8/18/1993	Tstm Wind	Not Measured	0	0	1	0
Camden	8/18/1993	Tstm Wind	Not Measured	0	0	1	0
Huntsville	8/19/1993	Tstm Wind	Not Measured	0	0	0	0
Rushville	6/21/1995	Tstm Wind	52 kts.	0	0	0	0
Schuyler County	3/25/1996	High Wind	Not Measured	1	0	0	0
Rushville	4/19/1996	Tstm Wind	Not Measured	0	0	0	0
Schuyler County	10/30/1996	High Wind	56 kts.	0	0	0	0
Schuyler County	4/6/1997	High Wind	56 kts.	0	0	0	0
Schuyler County	4/30/1997	High Wind	61 kts.	0	1	38K	0
Rushville	4/30/1997	Tstm Wind	Not Measured	0	0	8K	0
Schuyler County	9/29/1997	High Wind	55 kts.	0	0	0	0
Camden	3/27/1998	Tstm Wind	52 kts.	0	2	1.0M	0
Rushville	5/15/1998	Tstm Wind	Not Measured	0	0	0	0
Rushville	6/18/1998	Tstm Wind	Not Measured	0	0	0	0
Rushville	6/22/1998	Tstm Wind	Not Measured	0	0	0	0
Countywide	6/29/1998	Tstm Wind	Not Measured	0	0	0	0
Bader	6/29/1998	Tstm Wind	Not Measured	0	0	0	0
Rushville	7/22/1998	Tstm Wind	52 kts.	0	0	0	0
Schuyler County	11/10/1998	High Wind	57 kts.	0	1	60K	0
Rushville	11/10/1998	Tstm Wind	Not Measured	0	0	0	0
Rushville	6/1/1999	Tstm Wind	Not Measured	0	0	0	0
Huntsville	8/12/1999	Tstm Wind	70 kts.	0	0	77K	2.0M
Camden	6/13/2000	Tstm Wind	Not Measured	0	0	0	0
Rushville	6/23/2000	Tstm Wind	Not Measured	0	0	0	0
Rushville	7/5/2000	Tstm Wind	Not Measured	0	0	0	0
Rushville	8/2/2000	Tstm Wind	Not Measured	0	0	0	0
Littleton	9/11/2000	Tstm Wind	Not Measured	0	0	0	0
Huntsville	6/14/2001	Tstm Wind	50 kts.	0	0	0	0
Littleton	7/17/2001	Tstm Wind	61 kts.	0	0	0	0
Rushville	8/2/2001	Tstm Wind	50 kts.	0	0	0	0
Frederick	8/22/2001	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Camden	4/4/2003	Tstm Wind	61 kts.	0	0	0	0
Brooklyn	6/25/2003	Tstm Wind	55 kts.	0	0	0	0
Rushville	7/8/2003	Tstm Wind	52 kts.	0	0	0	0
Rushville	7/9/2003	Tstm Wind	50 kts.	0	0	0	0
Rushville	7/18/2003	Tstm Wind	52 kts.	0	0	0	0
Brooklyn	7/18/2003	Tstm Wind	55 kts.	0	0	0	0
Camden	8/26/2003	Tstm Wind	52 kts.	0	0	0	0
Brooklyn	5/24/2004	Tstm Wind	52 kts.	0	0	0	0
Rushville	5/30/2004	Tstm Wind	50 kts.	0	0	0	0
Littleton	5/31/2004	Tstm Wind	50 kts.	0	0	0	0
Rushville	8/9/2004	Tstm Wind	50 kts.	0	0	0	0
Brooklyn	10/29/2004	Tstm Wind	52 kts.	0	0	0	0
Camden	6/8/2005	Tstm Wind	50 kts.	0	0	0	0
Brooklyn	8/18/2005	Tstm Wind	50 kts.	0	0	0	0
Littleton	7/2/2006	Tstm Wind	56 kts.	0	0	0	0
Browning	7/19/2006	Tstm Wind	55 kts.	0	0	0	0
Rushville	1/7/2008	Tstm Wind	56 kts.	0	0	0	0
Rushville	6/3/2008	Tstm Wind	61 kts.	0	0	20K	0
Rushville	7/11/2008	Tstm Wind	52 kts.	0	0	40K	0
Camden	7/27/2008	Tstm Wind	52 kts.	0	0	0	0
Rushville	7/27/2008	Tstm Wind	52 kts.	0	0	2K	0
Littleton	12/27/2008	Tstm Wind	52 kts.	0	0	10K	0
Huntsville	6/23/2009	Tstm Wind	52 kts.	0	0	15K	0
Brooklyn	8/4/2009	Tstm Wind	52 kts.	0	0	10K	0
Rushville	8/4/2009	Tstm Wind	52 kts.	0	0	20K	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the historical thunderstorms varies in terms of the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is highly likely. High winds with widely varying magnitudes are expected to happen. According to the RPI, thunderstorms and high wind damage ranked as the number three hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	**4**	=	**16**

Vulnerability Analysis for Thunderstorm Hazard

Severe thunderstorms are an equally distributed threat across the entire jurisdiction; therefore, the entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. This plan will therefore consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Schuyler County are discussed in Table 4-9.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a severe thunderstorm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a severe thunderstorm. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

Potential Dollar Losses for Thunderstorm Hazard

A HAZUS-MH analysis was not completed for thunderstorms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a thunderstorm hazard, the available NCDC hazard information was condensed to include only thunderstorm hazards that occurred within the past ten years. Schuyler County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

It was determined that since 1999, Schuyler County has incurred $952,000 in damages relating to thunderstorms, including hail, lightning, and high winds. The resulting information is listed in Table 4-31; only events which caused property damage are listed.

Table 4-31: Schuyler County Property Damage (1999–2009)

Location or County	Date	Type	Property Damage
Rushville	08/18/99	Hail	$ 758,000
Huntsville	08/12/99	Tstm Wind	$ 77,000
		1999 Subtotal	$ 835,000
		2000-2007 Subtotal	$ -
Rushville	07/11/08	Tstm Wind	$ 40,000
Rushville	06/03/08	Tstm Wind	$ 20,000
Littleton	12/27/08	Tstm Wind	$ 10,000
Rushville	07/27/08	Tstm Wind	$ 2,000
		2008 Subtotal	$ 72,000
Rushville	08/04/09	Tstm Wind	$ 20,000
Huntsville	06/23/09	Tstm Wind	$ 15,000
Brooklyn	08/04/09	Tstm Wind	$ 10,000
		2009 Subtotal	$ 45,000
		Total Property Damage	**$ 952,000**

The historical NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. Based on the given averages in the last decade, Schuyler County incurs an annual risk of approximately $95,200 per year.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to these events.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warning of approaching storms are also vital to preventing the loss of property and ensuring the safety of Schuyler County residents.

4.4.5 Drought and Extreme Heat Hazard

Hazard Definition for Drought Hazard

Drought is a climatic phenomenon that occurs in Schuyler County. The meteorological condition that creates a drought is below normal rainfall. However, excessive heat can lead to increased evaporation, which will enhance drought conditions. Droughts can occur in any month. Drought differs from normal arid conditions found in low rainfall areas. Drought is the consequence of a reduction in the amount of precipitation over an undetermined length of time (usually a growing season or more).

The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands made by human activities, vegetation, and agricultural operations. Drought brings several different problems that must be addressed. The quality and quantity of crops, livestock, and other agricultural assets will be affected during a drought. Drought can adversely impact forested areas leading to an increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures.

Hazard Definition for Extreme Heat Hazard

Drought conditions are often accompanied by extreme heat, which is defined as temperatures that hover 10°F or more above the average high for the area and last for several weeks. Extreme heat can occur in humid conditions when high atmospheric pressure traps the damp air near the ground or in dry conditions, which often provoke dust storms.

Common Terms Associated with Extreme Heat

Heat Wave: Prolonged period of excessive heat, often combined with excessive humidity

Heat Index: A number in degrees Fahrenheit that tells how hot it feels when relative humidity is added to air temperature. Exposure to full sunshine can increase the heat index by 15°F.

Heat Cramps: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.

Heat Exhaustion: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs, resulting in a form of mild shock. If left untreated, the victim's condition will worsen. Body temperature will continue to rise and the victim may suffer heat stroke.

Heat and Sun Stroke: A life-threatening condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body's temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Source: FEMA

Previous Occurrences for Drought and Extreme Heat Hazard

The NCDC database reported seven drought/heat wave events in Schuyler County since 1997. The most recent reported event occurred in July 2006 across central and southeast Illinois. Afternoon high temperatures ranged from 94°F to 100°F most afternoons, with afternoon heat indices ranging from 105°F to 110°F. Overnight lows only fell into the mid-70s.

NCDC records of droughts/heat waves are identified in Table 4-32. Pictures of some of the historical drought events are shown in Appendix D. Additional details of individual hazard events can be found on the NCDC website.

Table 4-32: Schuyler County Drought/Heat Wave Events*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Statewide	07/26/97	Excessive Heat	N/A	2	0	0	0
Statewide	06/26/98	Excessive Heat	N/A	1	0	0	0
Statewide	07/20/99	Excessive Heat	N/A	4	0	0	0
Statewide	07/28/99	Excessive Heat	N/A	1	0	0	0
Statewide	07/22/05	Excessive Heat	N/A	1	0	0	0
Statewide	07/30/06	Heat	N/A	1	0	0	0
Statewide	08/01/06	Heat	N/A	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Drought and Extreme Heat Hazard

Droughts are regional in nature. All areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent for Drought and Extreme Heat Hazard

Droughts and extreme heat can be widespread or localized events. The extent of the droughts varies both in terms of the extent of the heat and the range of precipitation.

Risk Identification for Drought/Extreme Heat Hazard

Based on historical information and input from the planning team, the occurrence of future drought and extreme heat is possible. According to the RPI, drought and extreme heat is ranked as the number seven hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	2	=	4

Vulnerability Analysis for Drought and Extreme Heat Hazard

Drought and extreme heat impacts are an equally distributed threat across the entire jurisdiction; therefore, the county is vulnerable to this hazard and can expect the same impacts within the affected area. According to FEMA, approximately 175 Americans die each year from extreme heat. Young children, elderly, and infirmed populations have the greatest risk.

The entire population and all buildings have been identified as at risk. The building exposure for Schuyler County, as determined from the building inventory is included in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to drought. A critical facility will encounter many of the same impacts as any other building within the jurisdiction, which should involve only minor damage. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather. Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts similar to those discussed for critical facilities. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure

During a drought the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with a fire that could result from the hot, dry conditions. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a heat wave. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

Vulnerability to Future Assets/Infrastructure for Drought/Extreme Heat Hazard

Future development will remain vulnerable to these events. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought. Excessive demands of the populated area place a limit on water

resources. In rural areas, crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Analysis of Community Development Trends

Because droughts and extreme heat are regional in nature, future development will be impacted across the county. Although urban and rural areas are equally vulnerable to this hazard, those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions that create extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures and creating increased health problems. Furthermore, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the "urban heat island effect."

Source: FEMA

Local officials should address drought and extreme heat hazards by educating the public on steps to take before and during the event—for example, temporary window reflectors to direct heat back outside, staying indoors as much as possible, and avoiding strenuous work during the warmest part of the day.

4.4.6 Winter Storm Hazard

Hazard Definition for Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and strong weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, and death.

Ice (glazing) and Sleet Storms

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves frozen raindrops that bounce when they hit the ground or other objects. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

The most damaging winter storms in Illinois have been ice storms. Ice storms occur when moisture-laden gulf air converges with the northern jet stream causing strong winds and heavy precipitation. This precipitation takes the form of freezing rain coating power and communication lines and trees with heavy ice. The winds will then cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication. In the past few decades numerous ice storm events have occurred in Illinois.

Snowstorms

Significant snowstorms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. A blizzard is categorized as a snowstorm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. The strong winds during a blizzard blow about falling and already existing snow, creating poor visibility and impassable roadways. Blizzards have the potential to result in property damage.

Illinois has repeatedly been struck by blizzards. Blizzard conditions cannot only cause power outages and loss of communication, but also make transportation difficult. The blowing of snow can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe Cold

Severe cold is characterized by the ambient air temperature dropping to around 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences for Winter Storm Hazard

The NCDC database identified 37 winter storm and extreme cold events for Schuyler County since 1995. These winter storms and extreme cold weather events have been attributed with 13 deaths and 42 injuries. The most recent reported event occurred in January 2009. Clear skies over fresh snow caused early morning temperatures on January 15, 2009, to plunge well below zero in much of central and eastern Illinois.

The NCDC winter storms are listed in Table 4-33. Pictures of some of the historical winter storm events are shown in Appendix D. Additional details of individual hazard events can be found on the NCDC website.

Table 4-33: Winter Storm Events*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Central Illinois	12/8/1995	Winter Storm	N/A	1	0	0	0
Central Illinois	12/18/1995	Winter Storm	N/A	1	0	0	0
Statewide	1/4/1996	Winter Storm	N/A	0	0	0	0
Statewide	1/18/1996	Winter Storm	N/A	0	2	0	0
Statewide	2/2/1996	Extreme Cold	N/A	2	0	0	0
Statewide	1/8/1997	Heavy Snow	N/A	0	6	0	0
Statewide	1/15/1997	Winter Storm	N/A	1	7	0	0
Statewide	1/24/1997	Winter Storm	N/A	0	0	0	0
Statewide	1/26/1997	Winter Storm	N/A	0	9	0	0
Statewide	12/9/1997	Heavy Snow	N/A	1	0	0	0
Statewide	12/24/1997	Heavy Snow	N/A	0	0	0	0
Statewide	12/30/1997	Heavy Snow	N/A	3	0	0	0
Statewide	1/8/1998	Heavy Snow	N/A	0	0	0	0
Statewide	1/14/1998	Winter Storm	N/A	0	0	0	0
Statewide	3/8/1998	Winter Storm	N/A	2	0	0	0
Statewide	1/1/1999	Heavy Snow	N/A	1	1	0	0
Statewide	1/5/1999	Extreme Cold	N/A	0	0	0	0
Statewide	3/8/1999	Heavy Snow	N/A	0	5	0	0
Statewide	1/30/2002	Ice Storm	N/A	0	0	0	0
Statewide	3/1/2002	Heavy Snow	N/A	0	0	0	0
Statewide	1/2/2003	Heavy Snow	N/A	0	0	0	0
Statewide	2/14/2003	Heavy Snow	N/A	0	0	0	0
Statewide	11/24/2004	Winter Storm	N/A	0	4	0	0
Statewide	1/5/2005	Ice Storm	N/A	0	0	0	0
Statewide	3/21/2006	Winter Storm	N/A	0	0	0	0
Statewide	11/29/2006	Winter Storm	N/A	0	0	0	0
Statewide	12/1/2006	Winter Storm	N/A	0	0	0	0
Statewide	1/12/2007	Ice Storm	N/A	0	0	0	0
Statewide	2/12/2007	Blizzard	N/A	0	0	0	0
Statewide	2/12/2007	Winter Storm	N/A	0	0	0	0
Statewide	2/24/2007	Ice Storm	N/A	0	0	0	0
Statewide	4/5/2007	Frost/freeze	N/A	0	0	0	0
Statewide	12/1/2007	Ice Storm	N/A	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Statewide	12/8/2007	Ice Storm	N/A	0	0	0	0
Statewide	12/11/2007	Ice Storm	N/A	0	0	0	0
Statewide	12/18/2008	Ice Storm	N/A	0	0	0	0
Statewide	1/15/2009	Extreme Cold/wind Chill	N/A	1	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data is calculated regionally or in some cases statewide.

Hazard Extent for Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the jurisdiction.

Risk Identification for Winter Storm Hazard

Based on historical information and input from the planning team, the occurrence of future winter storms is possible. Winter storms of varying magnitudes are expected to happen. According to the RPI, winter storms were ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	**2**	=	**4**

Vulnerability Analysis for Winter Storm Hazard

Winter storm impacts are equally distributed across the entire jurisdiction; therefore, the entire county is vulnerable to a winter storm and can expect the same impacts within the affected area. The building exposure for Schuyler County, as determined from the building inventory, is included in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as other buildings within the jurisdiction. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-9 lists the types and numbers of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a winter storm. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses for Winter Storm Hazard

A HAZUS-MH analysis was not completed for winter storms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a winter storm hazard, the available NCDC hazard information was condensed to include only winter storm hazards that occurred within the past ten years. Schuyler County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

It was determined that since 1999, Schuyler County has not incurred significant property damages from winter storms, including sleet/ice and heavy snow.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Analysis of Community Development Trends

Because the winter storm events are regional in nature future development will be equally impacted across the county.

4.4.7 Hazardous Materials Storage and Transport Hazard

Hazard Definition for Hazardous Materials Storage and Transport Hazard

Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances between our borders every day. The transportation of chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce creating a demand for fertilizers, herbicides, and pesticides to be transported along rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences for Hazardous Materials Storage and Transport Hazard

Schuyler County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries, although there have been many minor releases that have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Schuyler County residents.

Geographic Location for Hazardous Materials Storage and Transport Hazard

The hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent for Hazardous Materials Storage and Transport Hazard

The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification for Hazardous Materials Release

Based on input from the planning team, the occurrence of a hazardous materials accident is possible. According to the RPI, Hazardous Materials Storage and Transport ranked as the number five hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	2	=	4

Vulnerability Analysis for Hazardous Materials Storage and Transport Hazard

Hazardous material impacts are an equally distributed threat across the entire jurisdiction; therefore, the entire county is vulnerable to a hazardous material release and can expect the same impacts within the affected area. The main concern during a release or spill is the population affected. The building exposure for Schuyler County, as determined from building inventory, is included in Table 4-10. This plan will therefore consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris and loss of function of the building (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a hazardous material release the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan it is important to emphasize that any number of these items could become damaged in the event of a hazardous material release. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

In terms of numbers and types of buildings and infrastructure, typical scenarios are described to gauge the anticipated impacts of hazardous material release events in the county.

The U.S. EPA's ALOHA (Areal Locations of Hazardous Atmospheres) model was utilized to assess the area of impact for an ammonia release at the Two Rivers FS facility in Rushville, IL.

Anhydrous ammonia is a clear colorless gas with a strong odor. Contact with the unconfined liquid can cause frostbite. Though the gas is generally regarded as nonflammable, it can burn within certain vapor concentration limits with strong ignition. The fire hazard increases in the presence of oil or other combustible materials. Vapors from an anhydrous ammonia leak initially hug the ground, and prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation

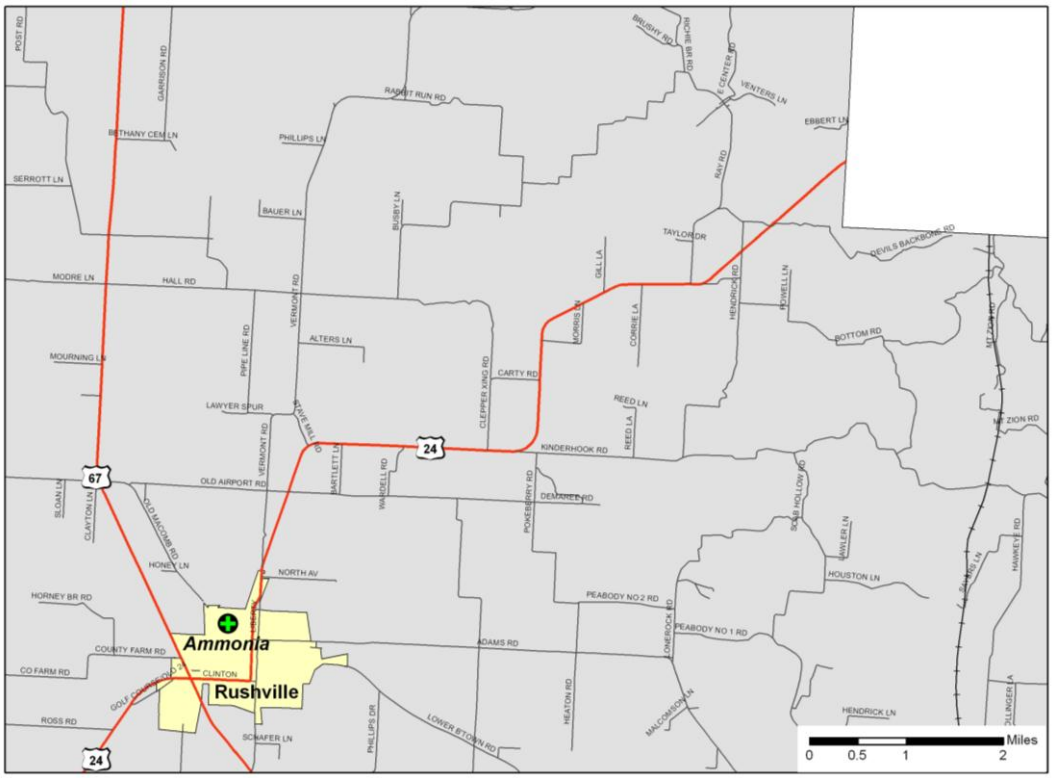
of high concentrations has adverse health effects. Anhydrous ammonia is generally used as a fertilizer, a refrigerant, and in the manufacture of other chemicals.

Source: CAMEO

ALOHA is a computer program designed especially for use by people responding to chemical accidents, as well as for emergency planning and training. Anhydrous ammonia is a common chemical used in industrial operations and can be found in either liquid or gas form. Rail and truck tankers commonly haul anhydrous ammonia to and from facilities.

For this scenario, moderate atmospheric and climatic conditions with a slight breeze from the west were assumed. The target area was chosen due to its proximity to the residential, commercial, and essential facility locations. The geographic area covered in this analysis is depicted in Figure 4-12.

Figure 4-12: Location of Chemical Release



Analysis

The ALOHA atmospheric modeling parameters, depicted in Figure 4-13, were based upon a westerly wind speed of five miles per hour. The temperature was 70°F with 75% humidity and a cloud cover of five-tenths skies.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 9.22 feet and the length set to 40 feet (20,000 gallons). At the time of its release, it was estimated that the tank was 100% full. The anhydrous ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to the ALOHA parameters, approximately 97,344 pounds of material would be released per minute. The image in Figure 4-14 depicts the plume footprint generated by ALOHA.

Figure 4-13: ALOHA Plume Modeling Parameters

SITE DATA:
Location: RUSHVILLE, ILLINOIS
Building Air Exchanges Per Hour: 0.37 (sheltered single storied)
Time: April 29, 2010 0832 hours CDT (user specified)

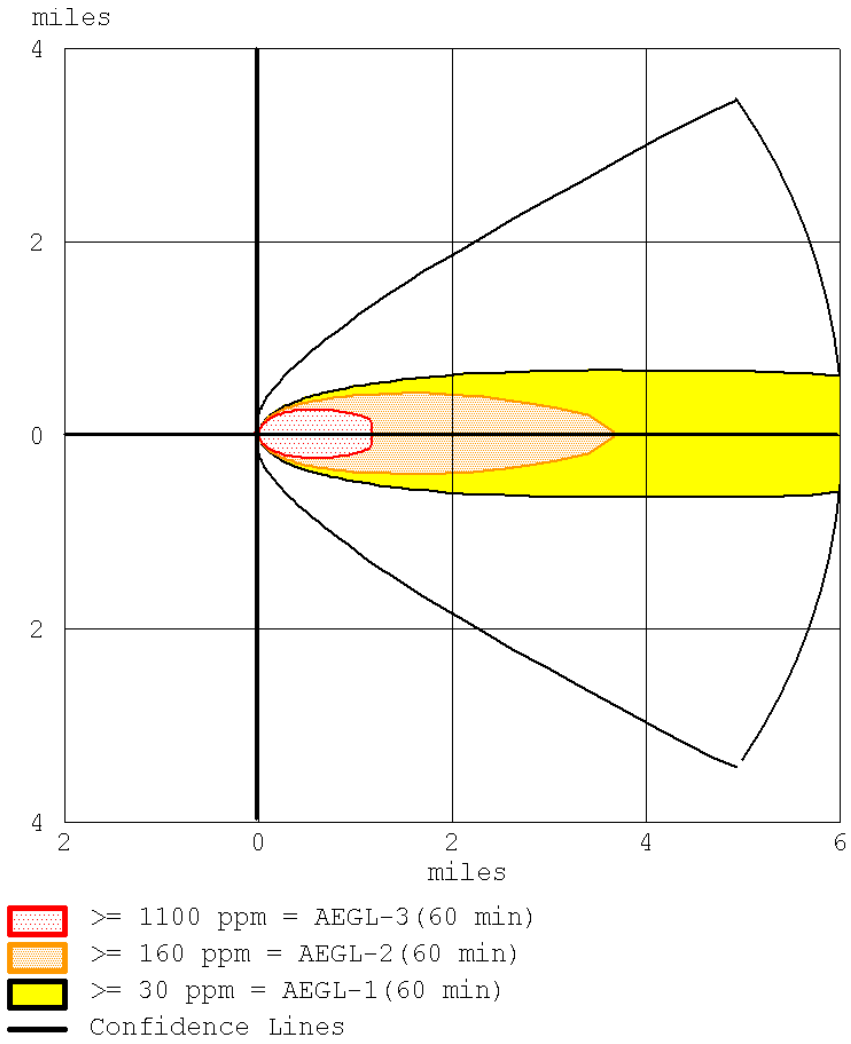
CHEMICAL DATA:
Chemical Name: AMMONIA Molecular Weight: 17.03 g/mol
AEGL-1(60 min): 30 ppm AEGL-2(60 min): 160 ppm AEGL-3(60 min): 1100 ppm
IDLH: 300 ppm LEL: 160000 ppm UEL: 250000 ppm
Ambient Boiling Point: -29.0° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
Wind: 5 miles/hour from W at 3 meters
Ground Roughness: open country Cloud Cover: 5 tenths
Air Temperature: 70° F Stability Class: C
No Inversion Height Relative Humidity: 75%

SOURCE STRENGTH:
Leak from hole in horizontal cylindrical tank
Flammable chemical escaping from tank (not burning)
Tank Diameter: 9.22 feet Tank Length: 40 feet
Tank Volume: 20,000 gallons
Tank contains liquid Internal Temperature: 70° F
Chemical Mass in Tank: 50.7 tons Tank is 100% full
Circular Opening Diameter: 2.5 inches
Opening is 1 feet from tank bottom
Release Duration: 24 minutes
Max Average Sustained Release Rate: 7,890 pounds/min
(averaged over a minute or more)
Total Amount Released: 97,344 pounds
Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
Model Run: Heavy Gas
Red : 1.2 miles --- (1100 ppm = AEGL-3(60 min))
Orange: 3.7 miles --- (160 ppm = AEGL-2(60 min))
Yellow: greater than 6 miles --- (30 ppm = AEGL-1(60 min))

Figure 4-14: Plume Footprint Generated by ALOHA



Acute Exposure Guideline Levels (AEGLs) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm). The image in Figure 4-15 depicts the plume footprint generated by ALOHA in ArcGIS.

- **AEGL 3:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death. The red buffer (>=1100 ppm) extends no more than six miles from the point of release after one hour.

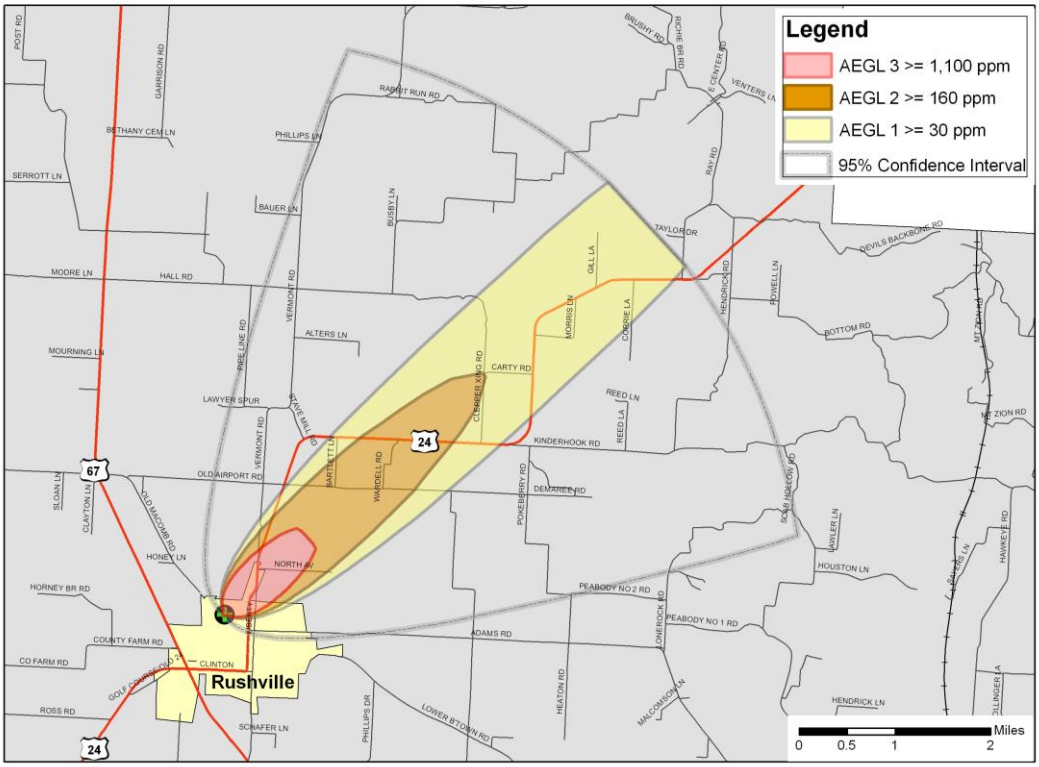
- **AEGL 2:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

The orange buffer (>=160 ppm) extends no more than six miles from the point of release after one hour.

- **AEGL 1:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. The yellow buffer (>=30 ppm) extends more than six miles from the point of release after one hour.

- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure level will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

Figure 4-15: ALOHA Plume Footprint Overlaid in ArcGIS

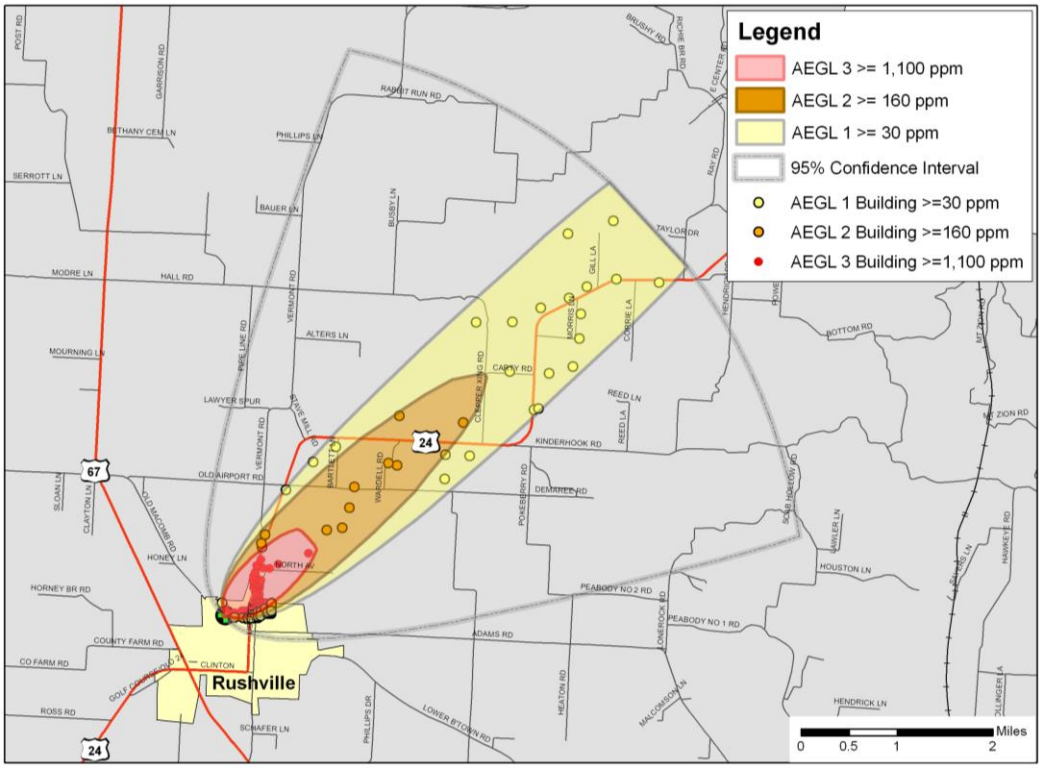


Results

By summing the building inventory within all AEGL levels (AEGL 3: >=1,100 ppm, AEGL 2: >=160 ppm and Level 1: >=3 ppm.), the GIS overlay analysis predicts that as many as 161 buildings could be exposed at a replacement cost of $25.6 million. If this event were to occur, approximately 305 people would be affected. The results are depicted in Figure 4-16.

The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious/non-profit, and education may be underestimated.

Figure 4-16: Schuyler County Building Inventory Classified By Plume Footprint



Building Inventory Damage

The results of the analysis against the building inventory points are depicted in Tables 4-34 through 4-37. Table 4-34 summarizes the results of the chemical spill by combining all AEGL level. Tables 4-35 through 4-37 summarize the results of the chemical spill for each level separately.

Table 4-34: Estimated Exposure for all Level (all ppm)

Occupancy	Population	Building Counts	Building Exposure (thousands)
Residential	305	122	$8,088,755
Commercial	0	11	$1,192,914
Industrial	0	0	$0
Agriculture	0	25	$2,024,814
Religious	0	0	$0
Government	0	0	$0
Education	(768)*	3	$14,294,390
Total	**305**	**161**	**$25,600,873**

*Approximate number of students at impacted school. Not included in Final tally because scenario assumes a nighttime release.

Table 4-35: Estimated Exposure for Level 3 (>=1100 ppm)

Occupancy	Population	Building Counts	Building Exposure (thousands)
Residential	195	78	$4,952,471
Commercial	0	7	$1,061,598
Industrial	0	0	$0
Agriculture	0	3	$297,774
Religious	0	1	$0
Government	0	0	$0
Education	(768)*	3	$14,294,390
Total	**963**	**91**	**$20,606,233**

*Approximate number of students at impacted school. Not included in Final tally because scenario assumes a nighttime release.

Table 4-36: Estimated Exposure for Level 2 (>=160 ppm)

Occupancy	Population	Building Counts	Building Exposure (thousands)
Residential	68	27	$1,534,370
Commercial	0	2	$1,362
Industrial	0	0	$0
Agriculture	0	6	$157,986
Religious	0	0	$0
Government	0	0	$0
Education	0	0	$0
Total	**68**	**35**	**$1,693,718**

Table 4-37: Estimated Exposure for Level 1 (>=30 ppm)

Occupancy	Population	Building Counts	Building Exposure (thousands)
Residential	20	8	$672,548
Commercial	0	0	$0
Industrial	0	0	$0
Agriculture	0	0	$0
Religious	0	0	$0
Government	0	0	$0
Education	0	0	$0
Total	**20**	**8**	**$672,548**

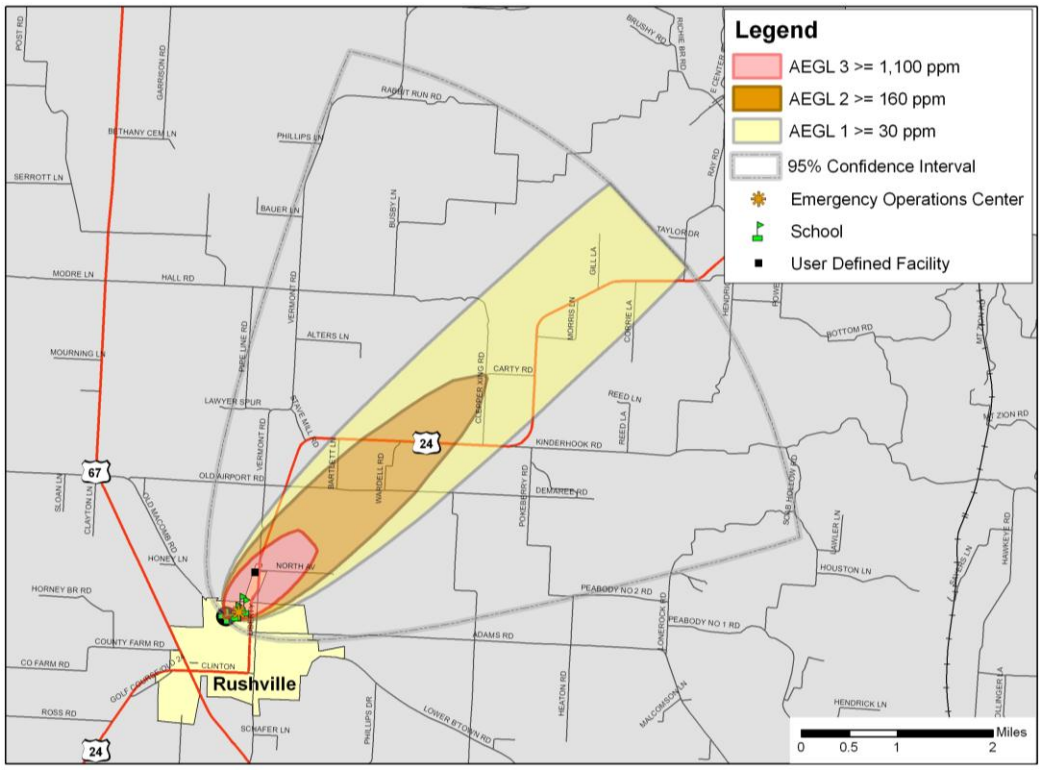
Critical Facilities Damage

There are five critical facilities within the limits of the chemical spill plume. The affected facilities are identified in Table 4-38. Their geographic locations are depicted in Figure 4-17.

Table 4-38: Essential User-Defined Facilities within Plume Footprint

Name
Spoon River College Rushville Campus
Schuyler Industry Middle School
Schuyler Industry High School
U of I Extension
Assembly of God Church (Shelter)

Figure 4-17: Essential Facilities within Plume Footprint



Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transport Hazard

Any new development within the county will be vulnerable to these events, especially development along major roadways.

Analysis of Community Development Trends

Because the hazardous material hazard events may occur anywhere within the county, future development will be impacted. The major transportation routes and the industries located in Schuyler County pose a threat of dangerous chemicals and hazardous materials release.

4.4.8 Fire Hazard

Hazard Definition for Fire Hazard

This plan will address three major categories of fires for Schuyler County: 1) tire/scrap fires; 2) structural fires; and 3) wildfires.

Tire Fires

The state of Illinois generates thousands of scrap tires annually. Many of those scrap tires end up in approved storage sites that are carefully regulated and controlled by federal and state officials. However, scrap tires are sometimes intentionally dumped in unapproved locations throughout the state. The number of unapproved locations cannot be readily determined. These illegal sites are owned by private residents who have been continually dumping waste and refuse, including scrap tires, at those locations for many years.

Tire disposal sites can be fire hazards, in large part, because of the enormous number of scrap tires typically present at one site. This large amount of fuel renders standard firefighting practices nearly useless. Flowing and burning oil released by the scrap tires can spread the fire to adjacent areas. Tire fires differ from conventional fires in the following ways:

- Relatively small tire fires can require significant fire resources to control and extinguish.
- Those resources often cost much more than Schuyler County government can absorb compared to standard fire responses.
- There may be significant environmental consequences of a major tire fire. Extreme heat can convert a standard vehicle tire into approximately two gallons of oily residue that may leak into the soil or migrate to streams and waterways.

Structural Fires

Lightning strikes, poor building construction, and building condition are the main causes for most structural fires in Indiana. Schuyler County has a few structural fires each year countywide.

Wildfires

When hot and dry conditions develop, forests may become vulnerable to devastating wildfires. In the past few decades an increased commercial and residential development near forested areas has dramatically changed the nature and scope of the wildfire hazard. In addition, the increase in structures resulting from new development strains the effectiveness of the fire service personnel in the county.

Previous Occurrences for Fire Hazard

Schuyler County has not experienced a significant or large-scale explosion at a fixed site or transportation route that has resulted in multiple deaths or serious injuries.

Geographic Location for Fire Hazard

Fire hazards occur countywide and therefore affect the entire county. The forested areas in the county have a higher chance of widespread fire hazard.

Hazard Extent for Fire Hazard

The extent of the fire hazard varies both in terms of the severity of the fire and the type of material being ignited. All communities in Schuyler County are affected by fire equally.

Risk Identification for Fire Hazard

The occurrence of a fire is possible, based on input from the planning team. According to the RPI, fire/explosion is ranked as the number eight hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	2	=	4

Vulnerability Analysis for Fire Hazard

This hazard impacts the entire jurisdiction equally; therefore, the entire population and all buildings within the county are vulnerable to fires and can expect the same impacts within the affected area.

Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

The building exposure for Schuyler County, as determined from the building inventory, is included in Table 4-10. Because of the difficulty predicting which communities are at risk, the entire population and all buildings have been identified at risk.

Critical Facilities

All critical facilities are vulnerable to fire hazards. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural damage from fire and water damage from efforts extinguishing fire. Table 4-9 lists the types and numbers of essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. Impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These impacts include structural damage from fire and water damage from efforts to extinguish the fire.

Infrastructure

During a fire the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a fire. Potential impacts include structural damage resulting in impassable roadways and power outages.

Vulnerability to Future Assets/Infrastructure for Fire Hazard

Any future development will be vulnerable to these events.

Analysis of Community Development Trends

Fire hazard events may occur anywhere within the county, because of this future development will be impacted.

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Section 5 - Mitigation Strategy

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. The goal of mitigation is to build disaster-resistant communities. Mitigation actions and projects should be based on a well-constructed risk assessment, provided in Section 4 of this plan. Mitigation should be an ongoing process adapting over time to accommodate a community's needs.

5.1 Community Capability Assessment

The capability assessment identifies current activities used to mitigate hazards. The capability assessment identifies the policies, regulations, procedures, programs, and projects that contribute to the lessening of disaster damages. The assessment also provides an evaluation of these capabilities to determine whether the activities can be improved in order to more effectively reduce the impact of future hazards. The following sections identify existing plans and mitigation capabilities within all of the communities listed in Section 2 of this plan.

5.1.1 National Flood Insurance Program (NFIP)

Schuyler County and Browning are members of the NFIP. The City of Rushville, the Village of Camden, and the Village of Littleton do not have identified flood hazard boundaries, and therefore these communities choose not to participate in the program.

HAZUS-MH identified approximately 87 households located within the Schuyler County Special Flood Hazard Area; 13 households paid flood insurance, insuring $1,972,700 in property value. The total premiums collected amounted to $14,749, which on average was $509 annually. From 1978 through 2007, 125 claims were filed totaling $98,735. The average claim was $2,271.7.

The county and incorporated areas do not participate in the NFIP'S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: 1) reduce flood losses; 2) facilitate accurate insurance rating; and 3) promote the awareness of flood insurance.

Table 5-1 identifies each community and the date each participant joined the NFIP.

Table 5-1: Additional Information on Communities Participating in the NFIP

Community	Participation Date	DFIRM Date	CRS Date	CRS Rating	Floodplain Ordinance
Schuyler County	7/18/1985	8/5/2010	NA	NA	
Village of Browning	7/31/1985	8/5/2010	NA	NA	

5.1.2 Stormwater Management and Stream Maintenance Ordinances

There are no stormwater management or stream maintenance ordinances for anywhere in Schuyler County.

5.1.3 Zoning Management Ordinances

There are no zoning management ordinances for anywhere in Schuyler County.

5.1.4 Erosion Management Program/ Policy

Schuyler County does not have an erosion management program.

5.1.5 Fire Insurance Rating Programs/ Policy

Table 5-3 lists Schuyler County's fire departments and respective information.

Table 5-3: Schuyler County Fire Departments, Ratings, and Number of Firefighters

Fire Department	Fire Insurance Rating	Number of Firefighters
Browning Fire Department	7	15
Industry Fire Protection District (Littleton Station)	7	15
Hickory-Kerton Fire Department	7	15
Rushville Fire Department		

5.1.6 Land Use Plan

Schuyler County does not have a land use plan

5.1.7 Building Codes

Schuyler County does not have any building codes.

5.2 Mitigation goals

In Section 4 of this plan, the risk assessment identified Schuyler County as prone to eight hazards. The MHMP planning team members understand that although hazards cannot be eliminated altogether, Schuyler County can work toward building disaster-resistant communities. Following are a list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure

(a) Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

(b) Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

(c) Objective: Minimize the amount of infrastructure exposed to hazards.

(d) Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the community.

(e) Objective: Improve emergency sheltering in the community.

Goal 2: Create new or revise existing plans/maps for the community

(a) Objective: Support compliance with the NFIP.

(b) Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

(c) Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate community residents on the hazards affecting their county

(a) Objective: Raise public awareness on hazard mitigation.

(b) Objective: Improve education and training of emergency personnel and public officials.

5.3 Mitigation Actions/Projects

Upon completion of the risk assessment and development of the goals and objectives, the planning committee was provided a list of the six mitigation measure categories from the *FEMA State and Local Mitigation Planning How to Guides*. The measures are listed as follows:

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.

- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting #3, held February 24, 2010, MHMP members were presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The MHMP members brought their mitigation ideas to Meeting #4 which was held July 14, 2010. The evaluation criteria (STAPLE+E) involved the following categories and questions.

Social:

- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:

- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:

- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:

- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:

- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolution in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:

- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental:

- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

5.4 Implementation Strategy and Analysis of Mitigation Projects

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is important. Some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action.

In Meeting #4, the planning team prioritized mitigation actions based on a number of factors. A rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 5-5. The factors were the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria listed in Table 5-4.

Table 5-4: STAPLE+E planning factors

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E – Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from high to low. An official cost benefit review will be conducted prior to the implementations of any mitigation actions. Table 5-5 presents mitigation projects developed by the planning committee, as well as actions that are ongoing or already completed. Since this is the first mitigation plan developed for Schuyler County, there are no deleted or deferred mitigation items.

Table 5-5: Mitigation Strategies

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Institute a buy-out plan for repetitive loss properties	Goal: Remove at-risk structures to reduce flood losses Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Browning	Complete	The community of Browning recently participated in voluntary buy-outs.
Distribute weather radios to critical facilities	Goal: Improve early warning and emergency communications Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Tornado, Thunderstorm, Flood, Earthquake, Drought, Winter Storm	Schuyler County, Rushville, Browning, Camden, Littleton	Complete	Critical facilities throughout the county are equipped with weather radios.
Purchase and install new warning sirens within the county	Goal: Improve early warning and emergency communications Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Rushville, Browning, Schuyler County	In Progress	Rushville is adequately equipped with warning sirens, although they should be updated, but Browning and unincorporated areas need more coverage. The County ESDA will oversee this project. Funding will be sought from the PDM program and FEMA. If funding is available, implementation will begin within three years.
Institute a buy-out plan for repetitive loss properties in Frederick	Goal: Remove at-risk structures to reduce future flood losses. Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Schuyler County	High	The County floodplain manager will oversee implementation of this project. Local resources will be used to identify potential buy-out properties. FEMA will be approached for funding. If funding is available, implementation will begin within one year.
Procure riprap and storage facility to stabilize slopes along roads in unincorporated areas	Goal: Improve resiliency of infrastructures Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Flood	Schuyler County	High	The County Engineer will oversee the implementation of this project. Funding will be sought from the PDM program, ILDOT, and community grants. If funding is available, implementation will begin within three years.
Procure back-up generators or transfer switches for critical facilities, especially the dialysis unit in Rushville	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Flood, Tornado, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire	Schuyler County, Rushville, Browning, Camden, Littleton	High	The County EMA will oversee the implementation of this project. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. If funding is available, this project is forecasted to begin within one year.
Strengthen and formalize mutual aid response agreements	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials	Hazmat	Schuyler County	High	The County ESDA will work with neighboring counties to establish and/or strengthen the agreements. If resources are available, implementation will begin within one year.
Develop an evacuation plan for hazardous materials spills that includes map of shelter locations	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Hazmat	Schuyler County, Rushville, Browning, Camden, Littleton	High	The county and communities will collaborate to develop evacuation plans and determine shelter locations. If funding and resources are available, implementation will begin within one year.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Implement new plans for public education including distribution of first aid kits and weather radios and pamphlets that address the importance of retrofitting infrastructure	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Drought, Fire, Subsidence	Schuyler County, Rushville, Browning, Camden, Littleton	High	The County ESDA will work with area schools, healthcare facilities, and businesses to implement this project. Funding will be sought from local sources. Implementation, if funding is available, will begin within one year. The county will try to find resources to ensure that public education is multi-lingual and multi-cultural.
Implement Nixle for mass media release via e-mail and text messages	Goal: Improve emergency communication with the public Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Subsidence	Schuyler County	High	The County ESDA will oversee this project. Local resources will be used to implement the project and notify the public. If resources are available, this project will begin within one year.
Establish safe rooms in critical facilities	Goal: Protect at-risk populations from severe weather. Objective: Improve emergency sheltering in the community.	Tornado, Thunderstorm	Schuyler County, Rushville, Browning, Camden, Littleton	High	The County ESDA will work with local shelters, schools, healthcare facilities, and first responders to identify locations to establish safe rooms. The county may opt to conduct an engineering study to determine best locations. The PDM program or local resources are funding options. If funding is available, implementation will begin within one year.
Create a database for identification of special needs population and institute a plan for rescue and recovery	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Subsidence	Schuyler County	In Progress	The development of the database is in progress.
Conduct a study for Combined Sewer Operation Recommendations	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Flood	Schuyler County, Rushville, Browning, Camden, Littleton	Medium	The County Engineer and surveyor will work with IEPA to conduct this study. Funding has not been secured as of 2010, but IEPA is a possible source. Implementation, if funding is available, will begin within three years.
Conduct a commodity flow study	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Hazmat	Schuyler County	Medium	The Regional Planning Commission will oversee this project. Funding will be sought from ILDOT, IEMA, and the PDM program. If funding is available, implementation will begin within three years.
Conduct a study to determine shelter capacity in the county, especially mobile home parks	Goal: Lessen the impacts of hazards to at-risk populations Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire, Subsidence	Schuyler County, Rushville, Browning, Camden, Littleton	Medium	The Regional Planning Commission will work with local shelters to complete this project and will perhaps use HAZUS-MH. If additional shelters or supplies are needed, the PDM program or local resources are funding options. If funding is available, implementation will begin within three years.
Trim trees to minimize the amount/duration of power outages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Winter Storm	Schuyler County, Rushville, Browning, Camden, Littleton	Medium	The County ESDA will work with local contractors and will pursue funding from local and state resources to implement this project. If funding and resources are available, implementation will begin within three years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Conduct a seismic study to evaluate bridge infrastructure strength	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Earthquake	Schuyler County, Rushville, Browning, Camden, Littleton	Low	The County Engineer will oversee the implementation of this project with assistance from IEMA and ILDOT. IEMA and ILDOT grants will be used to procure funds for the study, which is forecasted to begin within five years.
Install inertial valves at critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Earthquake	Schuyler County, Rushville, Browning, Camden, Littleton	Low	The County EMA will oversee implementation of this project and determine which facilities do not currently have inertial valves. Funding has not been secured as of 2010, but the PDM program and community grants are an option. If funding is available, implementation will begin within five years.
Elevate roads that frequently flood including IL State Route 6	Goal: Improve resiliency of critical transportation routes Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Flood	Schuyler County	Low	The County Engineer will oversee the implementation of this project. Local resources will be used to research options for signage. Funding has not been secured as of 2010, but the pre-disaster mitigation program, local resources, and ILDOT are possible funding sources. If funding is available, this project is forecasted to begin within five years.
Procure permanent signage and/or barricades to warn of flood hazards	Goal: Improve hazard communication with the public Objective: Equip public facilities and communities with means to guard against damage caused by secondary effects of hazards.	Flood	Schuyler County	Low	The County Highway Departments oversee the implementation of this project. Local resources will be used as much as possible and additional funding will be sought from the PDM program. Implementation, if funding is available, is forecasted to begin within five years.
Repair/protect well heads in all communities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Flood	Schuyler County, Rushville, Browning, Camden, Littleton	Low	The County Engineer will oversee this project. Funding will be sought from DNR, FEMA, and IEMA. If funding is available, implementation will begin within five years.
Improve rail crossing for Burlington Northern Line, possibly using crossing arms	Goal: Improve hazard communication with the public. Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Hazmat, Fire	Schuyler County	Low	Local government officials and first responders will oversee this project. Local resources, e.g. rail companies, will be approached to implement this project, and funding will be sought from local, state, and federal resources and community grants. If funding and resources are available, the project will begin within five years.
Develop ordinances to bury new power lines in subdivisions	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Tornado, Earthquake, Thunderstorm, Winter Storm	Schuyler, Rushville	Low	Although there is not a formal ordinance in place, new subdivisions typically bury power lines. The county will propose development of ordinances to require this practice for all future infrastructure. Local resources will be used to develop the ordinances.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Review and upgrade state building codes to international building codes	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Subsidence	Schuyler County, Rushville, Browning, Camden, Littleton	Low	The local planning commission will coordinate this planning effort. Local resources will be used to review existing codes and research new options. Implementation will begin within five years.
Implement natural snow fences/tree barriers in Dodsville and La Grange	Goal: Improve resiliency of major transportation routes. Objective: Minimize the amount of infrastructure exposed to hazards.	Winter Storm	Schuyler County	Low	The County Highway Engineer will oversee implementation of this project. Local resources and ILDOT will be used for funding. If funding is available, implementation will begin within five years.

The Schuyler County Emergency Service and Disaster Agency will be the local champions for the mitigation actions. The County Commissioners and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the five incorporated communities within and including Schuyler County was invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties. All potential strategies and goals that arose through this process are included in this plan. The county planning team used FEMA's evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.

Section 6 - Plan Maintenance

6.1 Monitoring, Evaluating, and Updating the Plan

Throughout the five-year planning cycle, the Schuyler County Emergency Management Agency will reconvene the MHMP planning committee to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held during January 2016 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or a declared disaster occurs in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the county commissioners.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated HAZUS-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, this updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Schuyler County and its incorporated jurisdictions will update the zoning plans and ordinances listed in Table 5-2 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the ESDA director and forwarded to the MHMP planning committee for discussion. Education efforts for hazard mitigation will be ongoing through the ESDA. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of this plan will be maintained in each jurisdiction and in the County ESDA Office.

APPENDICES

Glossary of Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

B

BFE – Base Flood Elevation

C

CAMEO – Computer-Aided Management of Emergency Operations
CEMA – County Emergency Management Agency
CEMP – Comprehensive Emergency Management Plan
CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act

E

EAP – Emergency Action Plan
ERPG – Emergency Response Planning Guidelines
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
FIS – Flood Information Study

G

GIS – Geographic Information System

H

HAZUS-MH – **Ha**zards **US**A **M**ulti-**H**azard
HUC – Hydrologic Unit Code

I

IDNR – Illinois Department of Natural Resources
IEMA – Illinois Emergency Management Agency
IDOT - Illinois Department of Transportation

M

MHMP – Multi-Hazard Mitigation Plan

N

NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SPC – Storm Prediction Center
SWPPP – Storm water Pollution Prevention Plan

U

USGS – United States Geological Survey

Appendix A: Multi-Hazard Mitigation Plan Meeting Minutes

IEMA Pre-Disaster Mitigation Plan

Assembly of the Schuyler County Planning Team Meeting 1:
Chairman: Rich Utter, Schuyler County ESDA Coordinator
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: February 3, 2010

Meeting Time: 10 a.m.

Place: 706 Maple Avenue, Rushville (Spoon River College-Rushville Facility)

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Megan Carlson	SIUC Geology
John Buechler	The Polis Center
Rich Utter	Schuyler County ESDA Coordinator
Russ Steil	IEMA
Don Schieferdecker	Sheriff/Schuyler County
Jack Swearingen	Village of Littleton
Ken Pitlik	Rushville City
David Schneider	Schuyler County
Linda Ward	Schuyler County Clerk
Max McClellan	County Board
Becky Niewohner	Schuyler County Health Department
Jessica Kirby	Schuyler County Health Department
Matt Plater	Schuyler Industry
Joanna Stay	Sarah D. Culbertson Memorial Hospital
Suzette Rice	Schuyler County CCAO
Sandra Trusewych	Two Rivers Regional Council

Introduction to the Pre-Disaster Mitigation Planning Process

The meeting is called to order

Narrative: A power-point presentation was given by Jonathan Remo. He explained that this project is in response to the Disaster Mitigation Act of 2000. The project is funded by a grant awarded by FEMA. A twenty-five percent match will be required from the county to fund this project. The county match will be met by sweat equity and GIS data acquired from the County Assessor's Office. The sweat equity will be an accumulation of time spent at the meetings, on research assignments, surveys, along with the time spent reviewing and producing the planning document.

Jonathan Remo introduced the Pre-Disaster Mitigation Website to the planning team. A username and password was given to the planning team, which will grant them access to the web site. The web site is used to schedule meetings, post contact information and download material pertaining to the planning process.

Jonathan Remo divided the planning project into five to six meetings. At the 1st meeting, the planning team will review critical facility maps. The planning team will be asked to research and verify the location of all critical facilities within the county. Jonathan stated that public participation is very important throughout the planning process. He explained that all of the meetings are open to the public but there will be a particular effort made to invite the public to the 3rd meeting. At that meeting, the SIUC Geology Department will present historic accounts of natural disasters that have affected this area. At the 2nd meeting the discussion will focus on natural disasters that are relevant to this area. These hazards will be given a probability rating and ranked by their occurrence and potential level of risk. Polis and SIUC Geology will research these hazards and present them to the planning team. The 3rd meeting is publicized in order to encourage public participation. Polis and SIUC Geology will produce a risk assessment in draft form; each planning team member will get a copy. Also they will present strategies and projects that FEMA and other counties have undertaken for the planning team to review. The 4th meeting consists of a brain storming session focused on disasters that were analyzed in the risk assessment report. The Planning Team will list strategies and projects that could be implemented to mitigate the potential hazards that threaten the county. FEMA requires that for every identified hazard, a strategy to mitigate the loss and damage must be in place. The strategies may range from educational awareness to hardening a building or building a levee. After the 4th meeting the plan will be in its final draft form. At the 5th meeting the planning team will need to review the plan prior to sending it to IEMA. IEMA will review the plan and will make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once the plan has been submitted to FEMA, local governments are eligible to apply for grants to mitigate these established hazards. After FEMA approves the plan, it is sent back to the Planning Team. At the 6th meeting the Planning Team will present the Pre-Disaster Mitigation Plan to the County Board for adoption. Incorporated communities must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA. The communities are encouraged to participate and contribute to development of the plan. Once the County Board has adopted the plan, each incorporated community will have the opportunity to adopt the plan as well.

Jonathan Remo then introduced Megan Carlson of SIUC. Megan Carlson presented three maps that identified critical facilities in the county. She asked the planning team to come up to review the maps to identify any corrections that need to be made to the maps. She assigned research homework arranged by categories to individual planning team members to locate missing or incorrect critical facilities.

Meeting was adjourned.

MEETING NAME Meeting 1 Mitigation

MEETING DATE 2/3/10

LOCATION Spoon River Rushville Campus

PRINT NAME	SIGN NAME	DEPARTMENT REPRESENTING
Russ Steil	Russ Steil	FEMA
Don L. Schieferdecker	Don Schieferdecker	Sheriff Schuyler Co.
Jack U. Swearingen	Jack U. Swearingen	Village of Littleton
Ken Pitlik		Rushville City
David Schneider	David J Schneider	Schuyler Co
Linda Ward	Linda Ward	Sch Co Clerk
~~Max~~ MAX McCLELLAND	Max McClellan	COUNTY BOARD
Becky Niewohner	Becky Niewohner	Schuyler Co. Health Dept.
Jessica Kirby	Jessica Kirby	Schuyler Co. Health Dept.
Megan Carlson	Megan Carlson	SIUC
Matt Plater	Matt Plater	Schuyler Industry Cusd #5
Joanna Stagg	Joanna M Stagg	Sarah D Culbertson Memorial Hospital
Tom Brechler	thePolis Center	thePolis Center
Suzette Rice	S Rice	Schuyler Co. CCAO

MEETING NAME Meeting 1 Mitigation

MEETING DATE 2/3/10

LOCATION Spox River Rushville Campus

PRINT NAME	SIGN NAME	DEPARTMENT REPRESENTING
Sandra Trusewych	Sandra Trusewych	Two Rivers Regional Council

IEMA Pre-Disaster Mitigation Plan

Assembly of the Schuyler County Planning Team Meeting 2:
Chairman: Rich Utter, Schuyler County ESDA Coordinator
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: March 17, 2010

Meeting Time: 10 a.m.

Place: 706 Maple Avenue, Rushville (Spoon River College-Rushville Facility)

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Megan Carlson	SIUC Geology
Rich Utter	Schuyler County ESDA Coordinator
Wendy Hillyer	Schuyler County ESDA
Linda S. Ward	Schuyler County Clerk
Jessica Kirby	Schuyler County Health Department
Becky Niewohner	Schuyler County Health Department
Ken Pitlik	Rushville City Council
Jack Swearingen	Village of Littleton
Don Schieferdecker	Schuyler County Sheriff
Dean Ross	Schuyler County Treasurer
Rob Baker	Village of Camden
Russ Steil	IEMA
Bob Flemming	IEMA
Matt Plater	SID #5
Nancy LeMaster	Culberston
Sandra Trusewych	Two River Regional Council

The meeting was called to order.

Jonathan Remo began the meeting by re-introducing the objectives of the PDM Planning document. The planning document is mandated as a result of the "Disaster Mitigation Act of 2000". Jonathan stated that the objective of the meeting was to prioritize a list of disasters that are relevant to Schuyler County.

Jonathan Remo provided the planning team with a handout to direct the focus of the meeting discussion. As Jonathan began to conduct the prioritizing process, he described the risk assessment ranking that FEMA has established.
Narrative: The Planning Team was then asked to assess and rank the hazards that could potentially befall Schuyler County using the risk priority index (RPI). The identified hazards were ranked as followed for Schuyler County:

#1: Tornado
#2: Flooding
#3: Thunderstorms/High Winds/Hail/Lightning
#4: Levee/Dam Failure
#5: Transpiration Hazardous Materials Release
#6: Winter Storm
#7: Extreme Heat/Drought
#8: Fire/Explosion
#9: Earthquake

Narrative: The planning team was then asked to analyze the historical weather events that have been plotted on a map of the county and communities therein. No corrections were noted by the planning team.

The planning team agreed to complete any missing information pertaining to critical facilities by the next meeting.

Meeting was adjourned.

MEETING NAME Meeting 2 Mitigation
MEETING DATE March 17, 2010
LOCATION Spoon River Rushville Campus

PRINT NAME	SIGN NAME	DEPARTMENT REPRESENTING
WENDY HILLYER	Wendy Hillyer	Sch Co ESDA
Linda S WARD	Linda S Ward	County Clerk
Jessica Kirby	Jessica Kirby	Schuyler Co. Health Dept.
Becky Niewohner	Becky Niewohner	Schuyler Co. Health Dept.
Ken P. Hill	Ken P. Hill	Rushville City Council
Jack U. Swearingen	Jack U Swearingen	Village of Littleton
Don Schieferdecker	Don Schieferdecker	Schuyler County Sheriff
Dean Ross	Dean Ross	Schuyler County Treasurer
Rob Baker	Rob Baker	Village of Camden
Russ Steil	Russ Steil	IEMA
Bob Flemming	Bob Flemming	IEMA
Matt Plater	Matt Plater	SID #5
Nancy LeMaster	Nancy LeMaster	Culbertson
Sandra Trusewych	Sandra Trusewych	Two Rivers Reg. Council

IEMA Pre-Disaster Mitigation Plan

Assembly of the Schuyler County Planning Team Meeting 3:
Chairman: Rich Utter, Schuyler County ESDA Coordinator
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: May 5, 2010

Meeting Time: 7 p.m.

Place: 706 Maple Avenue, Rushville (Spoon River College-Rushville Facility)

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Megan Carlson	SIUC Geology
Rich Utter	ESDA Coordinator
Wendy Hillyer	ESDA
Linda Ward	County Clerk
Suzette Rice	County Assessor
Ken Pitlik	Council Member – City of Rushville
Rob Baker	Mayor – Village of Camden
Jack Swearingen	Mayor – Village of Littleton
Joanna Stay	RN, Safety Planner – SDCM Hospital
David Schneider	Engineer – Schuyler County
Jessica Kirby	Health Department - Schuyler County
Jack Kurfman	Coordinator ESDA – Hancock County
Russ Steill	IEMA – Region 6

The meeting was called to order.

Jonathan Remo opened the meeting with an overview of the planning process and the roles of SIU and the Polis Center. Then he went on to explain the topics and objectives of the current meeting. Jonathan first presented the planning team with the list of hazards that the team had ranked by their level of risk from the previous meeting. He also presented a power point presentation of the history of Schuyler County's past disasters. This included covering each hazard that the County had focused on, the history of each and then the mitigation strategies. He defined mitigation as the act of avoidance and preparedness.

A draft of the Schuyler County Mitigation Plan and a copy of Mitigation Ideas, produced by FEMA Region 5 in July 2002, were given to each of the planning team members for review. It was explained by Jonathan the contents of the booklet and that each of the planning team members should return to meeting 4 with three mitigation strategies for each of the hazards identified by the planning team.

Jonathan Remo then asked the audience for questions or comment. After some discussion about the plan and how it would affect the community and its residents, he thanked those who came and a closed the presentation.

Meeting was adjourned.

MEETING 3 Schuyler County All Hazards Mitigation Planning Team

Date **May 5th 2010**
Place **Spoon River College – Rushville Center**

Attendance	Name	Title	Representing
	Rich Utter	Coordinator ESDA	Schuyler County
	Wendy Hillyer	ESDA	Schuyler County
	Linda Ward	County Clerk	Schuyler County
	Suzette Rice	County Assessor	Schuyler County
	Ken Pitlik	Council Member	City of Rushville
	Jack Swearingen	Mayor	Village of Littleton
	Rob Baker	Mayor	Village of Camden
	Joanna Stay	RN , Safety Planner	Sarah D Culbertson Memorial Hospital
	David Schneider	Engineer, Highway	Schuyler County
	Jessica Kirby	Health Department	Schuyler County
	Jack Kurfman	Coordinator ESDA	Hancock County
	Russ Steil	Region 6	Illinois Emergency Management Agency

NOTE: The attendence was taken with aboive participating in the meeting as witnessed by

Richard L. Utter - Chairman

IEMA Pre-Disaster Mitigation Plan

Assembly of the Schuyler County Planning Team Meeting 4:
Chairman: Rich Utter, Schuyler County ESDA Coordinator
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: July 14, 2010

Meeting Time: 10 a.m..

Place: 706 Maple Avenue, Rushville (Spoon River College-Rushville Facility)

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Beth Ellison	SIUC Geology
Laura Danielson	The Polis Center
Rich Utter	Schuyler County ESDA Coordinator
Wendy Hellyer	Schuyler County ESDA Administrative Assistant
Linda Ward	Schuyler County Clerk
David Schneider	Schuyler County Hwy Engineer
Max McClelland	Schuyler County Board Chairman
Jack Swearingen	Littleton Village Board/Littleton Fire Dept. Chief

The meeting was called to order.

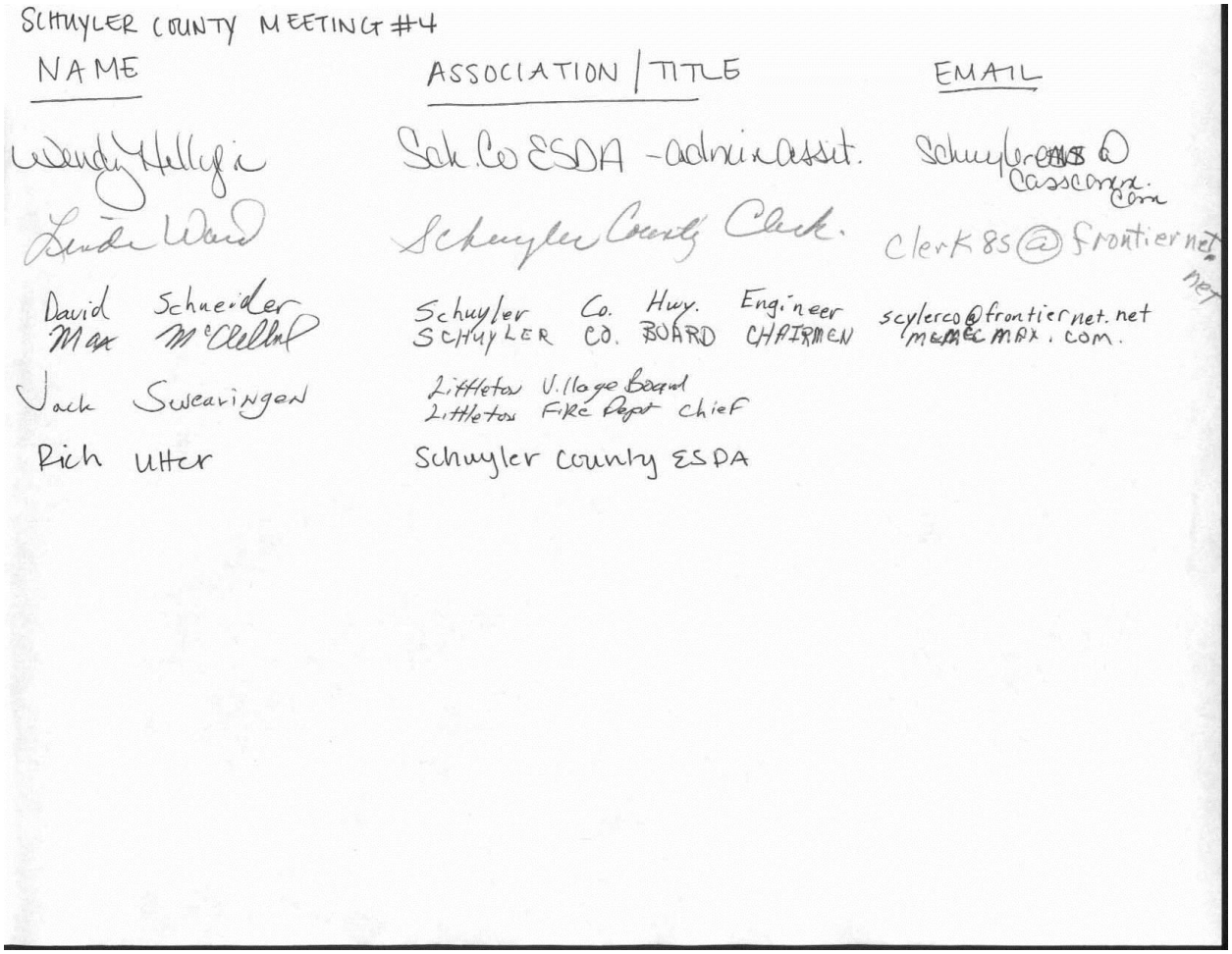
Jonathan Remo thanked everyone for attending the meeting and stated that if the planning team members needed extra mitigation strategy handbooks that they were available upon request. He introduced John Buechler and Laura Danielson from the Polis Center that were also in attendance that day.

Laura Danielson began by explaining that today's meeting would cover mitigation strategies that the planning team believed would prevent or eliminate the loss of life and property. She explained that the planning team should not make any reservations in the form of money or resources when developing this list. Also whenever possible, the planning team was directed to be specific about the location or focus area of a strategy, in respect to being within a municipality or county wide. Each hazard was addressed one at a time. The planning team listed new and current on-going mitigation strategies in respect to each hazard. The planning team prioritized mitigation actions based on a number of factors. A rating of High, Medium, or Low was assessed for each mitigation item. Listed below are the New Mitigation Strategies that the Planning Team came up with:

Mitigation Item	Goals and Objects Satisfied	Priority	Comments
Institute a buy-out plan for repetitive loss properties	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Complete	The community of Browning recently participated in voluntary buy-outs.
Distribute weather radios to critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Complete	Critical facilities throughout the county are equipped with weather radios.
Purchase and install new warning sirens within the county	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	In Progress	Rushville is adequately equipped with warning sirens, although they should be updated, but Browning and unincorporated areas need more coverage. The County EMA will oversee this project. Funding will be sought from the PDM program and FEMA. If funding is available, implementation will begin within three years.
Institute a buy-out plan for repetitive loss properties in Frederick	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	High	The County EMA will oversee implementation of this project. Local resources will be used to identify potential buy-out properties. FEMA will be approached for funding. If funding is available, implementation will begin within one year.
Procure riprap and storage facility for mass movement along roads in unincorporated areas	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	High	The County EMA will oversee the implementation of this project. Funding will be sought from the PDM program, ILDOT, and community grants. If funding is available, implementation will begin within three years.
Procure back-up generators or transfer switches for critical facilities, especially the dialysis unit in Rushville	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	High	The County EMA will oversee the implementation of this project. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. If funding is available, this project is forecasted to begin within one year.
Strengthen and formalize mutual aid response agreements	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials	High	The EMA director will work with neighboring counties to establish and/or strengthen the agreements. If resources are available, implementation will begin within one year.
Develop an evacuation plan for hazardous materials spills that includes map of shelter locations	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	High	The county and communities will collaborate to develop evacuation plans and determine shelter locations. If funding and resources are available, implementation will begin within one year.
Implement new plans for public education including distribution of first aid kits and weather radios and pamphlets that address the importance of retrofitting infrastructure	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	High	The County EMA will work with area schools, healthcare facilities, and businesses to implement this project. Funding will be sought from local sources. Implementation, if funding is available, will begin within one year. The county will try to find resources to ensure that public education is multi-lingual and multi-cultural.
Implement Nixle for mass media release via e-mail and text messages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	High	The County EMA will oversee this project. Local resources will be used to implement the project and notify the public. If resources are available, this project will begin within one year.
Establish safe rooms in critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	High	The EMA director will work with local shelters, schools, healthcare facilities, and first responders to identify locations to establish safe rooms. The county may opt to conduct an engineering study to determine best locations.The PDM program or local resources are funding options. If funding is available, implementation will begin within one year.

Mitigation Item	Goals and Objects Satisfied	Priority	Comments
Create a database for identification of special needs population and institute a plan for rescue and recovery	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	In Progress	The development of the database is in progress.
Conduct a study for Combined Sewer Operation Recommendations	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Medium	The County EMA and surveyor will work with IEPA to conduct this study. Funding has not been secured as of 2010, but IEPA is a possible source. Implementation, if funding is available, will begin within three years.
Conduct a commodity flow study	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Medium	The County EMA will oversee this project. Funding will be sought from ILDOT, IEMA, and the PDM program. If funding is available, implementation will begin within three years.
Conduct a study to determine shelter capacity in the county, especially mobile home parks	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Medium	The EMA director will work with local shelters to complete this project and will perhaps use HAZUS-MH. If additional shelters or supplies are needed, the PDM program or local resources are funding options. If funding is available, implementation will begin within three years.
Trim trees to minimize the amount/duration of power outages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Medium	The County EMA will work with local contractors and will pursue funding from local and state resources to implement this project. If funding and resources are available, implementation will begin within three years.
Conduct a seismic study to evaluate bridge infrastructure strength	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Low	The County EMA and the LEPC will oversee the implementation of this project with assistance from IEMA and ILDOT. IEMA and ILDOT grants will be used to procure funds for the study, which is forecasted to begin within five years.
Install inertial valves at critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Low	The County EMA will oversee implementation of this project and determine which facilities do not currently have inertial valves. Funding has not been secured as of 2010, but the PDM program and community grants are an option. If funding is available, implementation will begin within five years.
Elevate roads that frequently flood including IL State Route 6	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Low	The County EMA will oversee the implementation of this project. Local resources will be used to research options for signage. Funding has not been secured as of 2010, but the pre-disaster mitigation program, local resources, and ILDOT are possible funding sources. If funding is available, this project is forecasted to begin within five years.
Procure permanent signage and/or barricades to warn of flood hazards	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities with means to guard against damage caused by secondary effects of hazards.	Low	The County EMA and County Highway Departments oversee the implementation of this project. Local resources will be used as much as possible and additional funding will be sought from the PDM program. Implementation, if funding is available, is forecasted to begin within five years.
Repair/protect well heads in all communities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Low	The County EMA will oversee this project. Funding will be sought from DNR, FEMA, and IEMA. If funding is available, implementation will begin within five years.
Improve rail crossing for Burlington Northern Line, possibly using crossing arms	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Low	Local government officials and first responders will oversee this project. Local resources, e.g. rail companies, will be approached to implement this project, and funding will be sought from local, state, and federal resources and community grants. If funding and resources are available, the project will begin within five years.

Mitigation Item	Goals and Objects Satisfied	Priority	Comments
Develop ordinances to bury new power lines in subdivisions	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Low	Although there is not a formal ordinance in place, new subdivisions typically bury power lines. The county will propose development of ordinances to require this practice for all future infrastructure. Local resources will be used to develop the ordinances.
Review and upgrade state building codes to international building codes	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Low	The County EMA will coordinate this planning effort. Local resources will be used to review existing codes and research new options. Implementation will begin within five years.
Implement natural snow fences/tree barriers in Dodsville and La Grange	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Low	The County EMA will oversee implementation of this project. Local resources and ILDOT will be used for funding. If funding is available, implementation will begin within five years.


SCHUYLER COUNTY MEETING #4

NAME	ASSOCIATION / TITLE	EMAIL
Wendy Kelly	Sch Co ESDA - admin assist.	Schuylerems@casscomm.com
Linda Ward	Schuyler County Clerk.	clerk8s@frontiernet.net
David Schneider	Schuyler Co. Hwy. Engineer	
Max McClelland	SCHUYLER CO. BOARD CHAIRMEN	scylerco@frontiernet.net memmcmax.com.
Jack Swearingen	Littleton Village Board Littleton Fire Dept chief	
Rich Utter	Schuyler County ESDA	

IEMA Pre-Disaster Mitigation Plan

Assembly of the Schuyler County Planning Team Meeting 5:
Chairman: Rich Utter, Schuyler County ESDA Coordinator
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: August 25, 2010

Meeting Time: 10 am

Place: Spoon River College – Rushville Center

Planning Team/Attendance:

Linda Ward	Schuyler County
Richard Utter	Schuyler County
Ken Pitlik	City of Rushville
Jack Swearingen	Villae of Littleton
Jeff Boyd	Village of Browning
Becky Niewohner	Schuyler County
Jessica Kirby	Schuyler County
Nacy LeMaster	Sarah D Culbertson Memorial Hospital

The meeting was called to order.

Rich Utter opened the meeting with an overview of what was to happen from this point on with the plan. He stated that the plan could be reviewed by the Planning Team members for about 2 weeks so everyone would have ample amount of time look at and review the plan for any discrepancies. He also stated that in approximately 3 weeks the plan would be sent to IEMA/FEMA. They would then review it and if everything is OK with the plan, then we should hear back from IEMA/FEMA hopefully by October for their approval.

Rich then explained that once it comes back approved, then a Resolution will have to be passed by all municipalities. After they are passed, they needed to be returned Rich and he will forward them on to FEMA. Once FEMA gets the Resolutions, they will send notification that the municipality has a completed and approved plan.

He also explained that once the plan is submitted to IEMA/FEMA for their review, the municipalities can begin formulating and putting together their projects for funding. .

It was also explained to the planning team that FEMA will require a five-year update to the plan. Rich told the planning team that in another five years, the members should come together again, most likely under the direction of the ESDA Director, to review the plan and make any necessary

changes to it. He explained that FEMA will probably send out a reminder as to when this is supposed to take place.

After Rich explained the above process, he pointed out specific tables and places in the plan that needed clarification from the team members. After discussing a few changes, the planning team members looked at the plan for a while longer.

Since there were no more comments about the plan, the meeting was adjourned.

MEETING 5 Schuyler County All Hazards Mitigation Planning Team

Date **August 25th 2010**
Place **Spoon River College - Rushville Center**

Attendance	Name	Title	Representing
	Linda Ward	Clerk	Schuyler County
	Richard Utter	ESDA Coordinator	Schuyler County
	Ken Pitlik	Council Member	City of Rushville
	Jack Swearingen	Mayor	Village of Littleton
	Jeff Boyd	Fire Chief	Village of Browning
	Becky Niewohner	Director – Health Dept.	Schuyler County
	Jessica Kirby	Health Department	Schuyler County
	Nancy LeMaster	RN ER Supervisor	Sarah D Culbertson Memorial Hospital

NOTE: The attendance was taken with the above participating in the meeting as witnessed by

Richard Utter – Chairman

Appendix B: Local Newspaper Articles and Photographs

Public Notice

PUBLIC MEETING ON SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

The Schuyler County Multi-Hazard Mitigation Steering Committee will host a public information and strategy planning session at 10:00 a.m. on Wednesday, July 14, 2010, at Spoon River College, 706 Maple Avenue, Rushville, Illinois. Through a grant, Schuyler County ESDA has formed an alliance with The Polis Center of Indiana University-Purdue University Indianapolis (IUPUI) and Southern Illinois University-Carbondale to identify potential natural hazards and to produce a mitigation plan to address the issues. The ongoing efforts of the partnership will result in a Multi-Hazard Mitigation Plan (MHMP), which will seek to identify potential natural hazards for Schuyler County, and then establish a mitigation measure that is intended to reduce or eliminate the negative impact that a particular hazard may have on the locality.

Over the last several months the steering committee has been working with The Polis Center and staff from the SIU-Carbondale Geology Department to develop a Multi-Hazard Mitigation Plan (MHMP) for the county to submit to the Federal Emergency Management Agency for approval.

The Federal Emergency Management Agency (FEMA) now requires each unit of government in the United States to have a FEMA-approved MHMP, so completion of the Schuyler County plan is critical. The MHMPs will serve as framework for developing hazard mitigation projects that will reduce the negative impacts of future disasters on the communities and unincorporated areas of the county. Examples of projects that have been completed by some communities include storm shelters, warning sirens, flood walls; and fire protection enhancements.

The steering committee has identified the following hazards: tornadoes, thunderstorms/high winds/hail, hazardous materials release, drought/extreme heat, and severe winter storms. The committee then selected hazards for The Polis Center to model with HAZUS-MH, a GIS-based risk mitigation tool developed by FEMA. HAZUS-MH is capable of predicting the probate impacts of specific disasters in terms of financial, human life, and safety impacts, as well as various others.

Once the plan is completed, the committee will submit it to FEMA for approval. The committee will also work to develop funding for any mitigation activities that are identified.

The public is invited to attend the July 14 meeting and the steering committee is interested in receiving public input on the plan.

Appendix C: Adopting Resolutions

Resolution #_____

ADOPTING THE SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Schuyler County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Schuyler County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Schuyler County Commissioners hereby adopt the Schuyler County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Schuyler County Emergency and Disaster Services Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
County Commissioner Chairman

_____
County Commissioner

_____
County Commissioner

_____
Attested by: County Clerk

Resolution #_____

ADOPTING THE SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Rushville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Rushville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Rushville hereby adopts the Schuyler County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Schuyler County Emergency and Disaster Services Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Indiana Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Browning recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Rushville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Rushville hereby adopts the Schuyler County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Schuyler County Emergency and Disaster Services Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Indiana Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____

Resolution #_____

ADOPTING THE SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Camden recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Camden participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Camden hereby adopts the Schuyler County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Schuyler County Emergency and Disaster Services Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE SCHUYLER COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Littleton recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Littleton participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Littleton hereby adopts the Schuyler County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Schuyler County Emergency and Disaster Services Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Appendix D: NCDC Historical Hazards

Table of Contents

TORNADO

File Name: Tornado_1981_Littleton_1
Event: Tornado
Date: 1981
Description: 1981 tornado at Littleton, IL
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_1
Event: Tornado
Date: 1938
Description: Home of Emma Tayloer
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_2
Event: Tornado
Date: 1938
Description: Bartlow Packing Company
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_3
Event: Tornado
Date: 1938
Description: Howard Bartow House
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_4
Event: Tornado
Date: 1938
Description: Charlie Standard Residence
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_5
Event: Tornado
Date: 1938
Description: The Broom Works on South Congress Street
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_1938_6
Event: Tornado
Date: 1938
Description: The old Woolen Mill on West Madison Street
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Tornado_2003_1
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_2
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_3
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_4
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_5
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_6
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_7
Event: Tornado
Date: 2003
Source: Keenan D. Campbell

File Name: Tornado_2003_8
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

File Name: Tornado_2003_9
Event: Tornado
Date: 2003
Source: Richard Utter, Schuyler County ESDA

FLOOD

File Name: Flood_1927_Browning_1
Event: Flood
Date: 1927
Description: Flood Scene in Browning in 1927
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1927_Browning_2
Event: Flood
Date: 1927
Description: Flood Scene in Browning in 1927
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1903_Browning_1
Event: Flood
Date: 1903
Description: 1903 Browning Flood Scene – John H. Trone Store, Barber Shop, John H. Kelly Store, Depot, Hotel, Jeff Bates Building, E.A. Stombaugh Store and Doug Laster Home.
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_1
Event: Flood
Date: 1922
Description: Flood of 1922
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_Frederick_1
Event: Flood
Date: 1922
Description: Frederick in Flood of 1922
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_Frederick_2
Event: Flood
Date: 1922
Description: 1922 Flood at Frederick
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_Frederick_3
Event: Flood
Date: 1922
Description: Frederick in Flood of 1922
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_Frederick_4
Event: Flood
Date: 1922
Description: Looking down on 1922 Frederick Flood
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1922_Hickory_1
Event: Flood
Date: April 15, 1922
Description: High water April 15, 1922 at the home of John and Carlotte Briney in Hickory Township
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1943_Frederick_1
Event: Flood
Date: 1943
Description: Frederick in Flood of 1943
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1943_Frederick_2
Event: Flood
Date: 1943
Description: 1943 Flood at Frederick - The old Rebman House
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1943_Frederick_3
Event: Flood
Date: 1943
Description: Flood at Frederick in 1943. Club House across the Illinois River. People on House: Maggie and Vern Wilcox
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

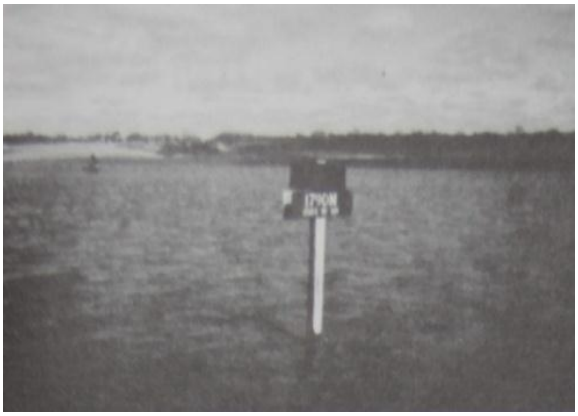
File Name: Flood_1943_Frederick_4
Event: Flood
Date: 1943
Description: 1943 Frederick Flood
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1943_Browning_1
Event: Flood
Date: 1943
Description: 1943 Browning Flood
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

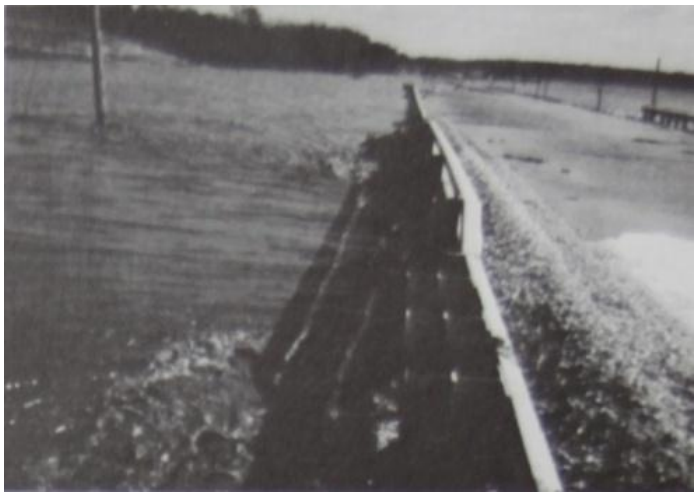
File Name: Flood_1945_Frederick_1
Event: Flood
Date: 1945
Description: Grocery Store at Frederick in the Flood of 1945
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_1
Event: Flood
Date: 1985
Description: 1985 Flood somewhere in Schuyler County, IL
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_Woodstock_1
Event: Flood
Date: 1985
Description: Flood of 1985 in Woodstock Township
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.



File Name: Flood_1985_Brooklyn_1
Event: Flood
Date: March 1985
Description: Lantz Road at Brooklyn, Illionis, Route 101 March of 1985
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.



File Name: Flood_1985_Brooklyn_2
Event: Flood
Date: March 1985
Description: New bridge on Route 101 near Brooklyn, Illinois, March of 1985
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_Brooklyn_3
Event: Flood
Date: March 1985
Description: Brooklyn Road, Route 101, in the Flood 1985
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_Frederick_1
Event: Flood
Date: March 1985
Description: Frederick during the 1985 Flood
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_Frederick_2
Event: Flood
Date: March 1985
Description: Approaching Frederick from Browning, Rout 100. Flood of 1985
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1985_2
Event: Flood
Date: March 1985
Description: Illinois River crests past flood stage in 1985
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Flood_1995_1
Event: Flood
Date: 1995
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_1995_2
Event: Flood
Date: 1995
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_1995_3
Event: Flood
Date: 1995
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_1995_4
Event: Flood
Date: 1995
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_1995_5
Event: Flood
Date: 1995
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2005_1
Event: Flood
Date: Winter 2005
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2005_2
Event: Flood
Date: Winter 2005
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2005_3
Event: Flood
Date: Winter 2005
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2005_4
Event: Flood
Date: Winter 2005
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2005_5
Event: Flood
Date: Winter 2005
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2009_1
Event: Flood
Date: May 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2009_2
Event: Flood
Date: May 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2009_3
Event: Flood
Date: May 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Flood_2009_4
Event: Flood
Date: May 2009
Source: Richard Utter, Schuyler County ESDA

WINTER STORM

File Name: Ice_Jan_2009_1
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Ice_Jan_2009_2
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Ice_Jan_2009_3
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Ice_Jan_2009_4
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Ice_Jan_2009_5
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

File Name: Ice_Jan_2009_6
Event: Ice Storm
Date: Late December 2008– Early January 2009
Source: Richard Utter, Schuyler County ESDA

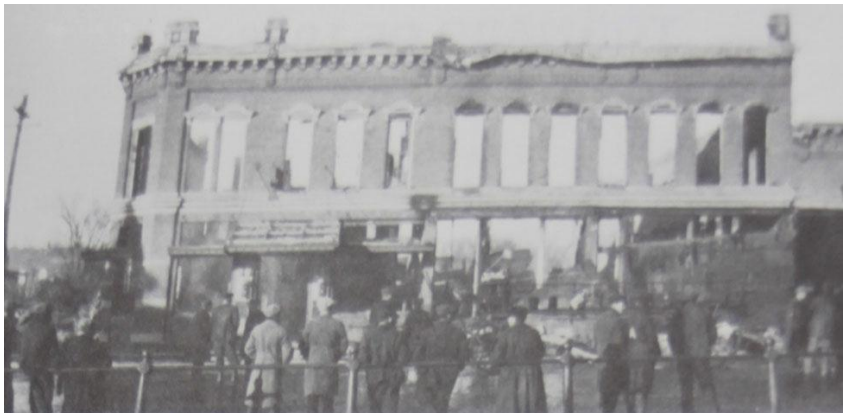
File Name: Ice_1938_1
Event: Ice Storm
Date: 1938
Description: Ice Storm of 1938
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Ice_1949_1
Event: Ice Storm
Date: Winter 1949
Description: Ice Storm of Winter 1949
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

HAZMAT

File Name: Train_wreck
Event: Train wreck
Date:
Description: Train wreck above Browning, IL
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

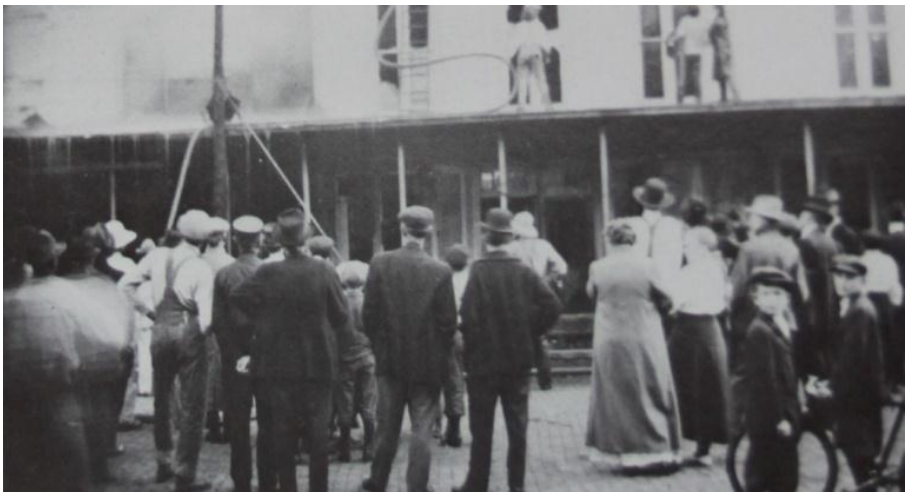
FIRE



File Name: Fire_1924_Rushville_1
Event: Fire
Date: 1924
Description: North Side of Rushville Square after a fire in 1924 – where Peacock's and kerr Hardware now stand.
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Fire_1924_Rushville_2
Event: Fire
Date: 1924
Description: The Little Building located on the northwest corner of the square after the 1924 fire
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Fire_1924_Rushville_3
Event: Fire
Date: 1924
Description: Bank of Rushville was destroyed by a fire in 1924
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.



File Name: Fire_1924_Rushville_4
Event: Fire
Date: 1924
Description: Northwest corner square during the 1924 fire
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: Fire_2009_1
Event: Fire
Date: April, 2009
Description: An estimated 11,000 animals were killed in a multi-million dollar loss at a hog confinement fire in Schuyler County.
Source: WGEM

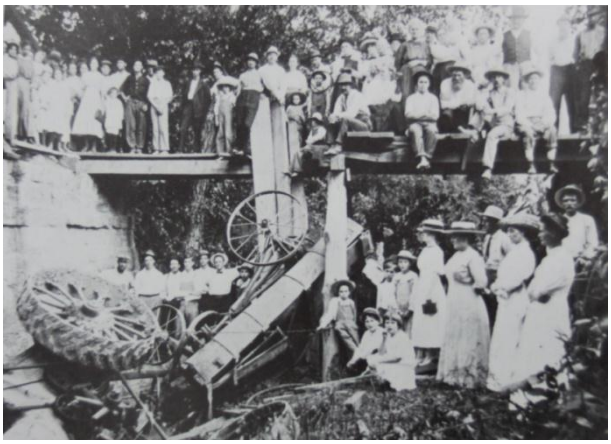
File Name: Fire_2009_2
Event: Fire
Date: April, 2009
Description: An estimated 11,000 animals were killed in a multi-million dollar loss at a hog confinement fire in Schuyler County.
Source: WGEM

File Name: Fire_2009_3
Event: Fire
Date: April, 2009
Description: An estimated 11,000 animals were killed in a multi-million dollar loss at a hog confinement fire in Schuyler County.
Source: WGEM

File Name: Fire_2009_4
Event: Fire
Date: April, 2009
Description: An estimated 11,000 animals were killed in a multi-million dollar loss at a hog confinement fire in Schuyler County.
Source: WGEM

OTHER

File Name: Bridge_1912_1
Event: Bridge Fail
Date: August 21, 1912
Description: On August 21, 1912 at 6:00 p.m. a threshing machine weighing 20,000 pounds fell through the unsafe Birmingham Bridge. Three men were on it and two were binned beneath it; all survived.
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.



File Name: Bridge_1912_2
Event: Bridge Fail
Date: August 21, 1912
Description: Wearing their Sunday best the young and old alike swarmed to the scene of the wreckage of the threshing machine that went through the bridge at Birmingham.
Source: Schuyler County Illinois History: Compiled in 1985 by the Schuyler county jail museum. 1985.

File Name: SevereStorm_July2010_2
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_8
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_16
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_19
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_34
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_37
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

File Name: SevereStorm_July2010_40
Event: Severe Storm
Date: July 2010
Source: Richard Utter, Schuyler County ESDA

Appendix E: Historical Hazard Maps

-see attached map.

Appendix F: Critical Facilities List

Communication Facilities Report

ID	Name	Address	City	Class	Owner	Function	ReplaCost
1	KLG323	RT 100 N	FREDER	CDFLT	ADM		0
2	WPXV836	On Road 650N; 4.4 mi. S of Hwys 67 &	Rushville	CDFLT	BNSF Railway Co		200
3	WNEX523	ON E-W RD 650N .8 MI E OF HWY 24	RUSHVI	CDFLT	BNSF Railway		0
4	WNRG515	RAILROAD MILEPOST 121.5 HBD	FREDER	CDFLT	BNSF Railway		0
5	WNYV230	ON RD 650 N 4.4 MI S OF HWYS 67 &	RUSHVI	CDFLT	BNSF Railway		0
7	WNRE739	5.5 MI SE NEAR RT 100	ASTORIA	CDFLT	BRINEY,		0
9	WNSI330	S SIDE OF IL RT 103 AT 4 MI MARKER	RUSHVI	CDFLT	BRINEY, HOMER		0
11	WPFC528	1/2 BLK N OF RT 100 ON WALNUT ST	BROWNI	CDFLT	BROWNING		10
14	WRO511	S OF RT 103 AT 4 MI MARKER E OF	RUSHVI	CDFLT	BURRUS SEED		0
15	WNFD682	220 W WASHINGTON	RUSHVI	CDFLT	CITY OF		100
96	WNCD441	State Route 101 and State Route 99		CDFLT	State of Illinois		100
97	WPWW299	IL DHS Facility	Rushville	CDFLT	State of Illinois		200
100	WNZR616		Rushville	CDFLT	IL DOT-		100
101	WQJK830	RR1 Camden	Camden	CDFLT	US COC Cellular		200
102	WQJP636	Village of Brooklyn	Brooklyn	CDFLT	US COC Cellular		200
17	KNNL338	11 KM S	RUSHVI	CDFLT	DYCHE JR,		0
19	WNUZ410	HWY 100 E EDGE	BLUFF	CDFLT	E D DOUBLE P		0
21	WPMF355	0.2KM SOUTH OF SR 103 & US 67	BEARDS	CDFLT	ESTHER, CHET		0
23	WNFK804	N SIDE GRAVEL RD 1/4 MI W US 67	FREDER	CDFLT	G L		0
25	WQJE486	Inter. of Lone Rock Rd. and SR-13	Rushville	CDFLT	Hickory Kerton		100
27	WPJS799	6.4 KM EAST OF	PLEASA	CDFLT	ILLINOIS SIGNAL		100

ID	Name	Address	City	Class	Owner	Function	ReplaCost
28	WPCK306	IL RT 100 W ON BLACKTOP & W 1/2	SHELDO	CDFLT	J R BRINEY &		0
30	WQAD387	RR2, DOWN RD & 24	RUSHVI	CDFLT	KESSLER,		0
98	WQDC353	State of Illinios		CDFLT	State of Illinois		200
32	WNSI574	OLD MACOMB RD & RAILROAD STS	RUSHVI	CDFLT	Schulyer County		100
34	KRH633	817 E. ADAMS STREET	RUSHVI	CDFLT	METAMORA		100
35	WPEA646	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	Nextel License		200
37	WPED729	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	Nextel License		0
39	WPED731	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	Nextel License		0
41	WPEF755	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	Nextel License		0
43	WPEF792	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	Nextel License		0
45	WPMZ773	RR2 BOX 202	RUSHVI	CDFLT	Nextel License		200
47	WPNR879	RR2 BOX 202	RUSHVI	CDFLT	Nextel License		200
49	WPDY313	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
51	WPEE716	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
53	WPEN617	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
55	WPES547	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
57	WPEZ681	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
59	WPFA388	4.4 MI S OF 67 & 24	RUSHVI	CDFLT	NEXTEL WIP		0
61	WQJZ633	RR 3 OLD MACOMB ROAD	RUSHVI	CDFLT	Novariant, Inc.		200
63	KNNI375	220 W WASHINGTON ST	RUSHVI	CDFLT	RUSHVILLE -		0
65	KNDV808	238 S CONGRESS	RUSHVI	CDFLT	SARA		100
67	WNSJ772	238 S CONGRESS ST	RUSHVI	CDFLT	SARAH D		100
69	KVT599	720 N MAPLE AVE	RUSHVI	CDFLT	SCHUYLER		100

ID	Name	Address	City	Class	Owner	Function	ReplaCost
70	WNQU225	220 W WASHINGTON ST FIRE HOUSE	RUSHVI	CDFLT	SCHUYLER		100
71	WPUE523	234 SOUTH MONROE STREET	RUSHVI	CDFLT	SCHUYLER		10
74	KSJ274	200 W WASHINGTON ST	RUSHVI	CDFLT	SCHUYLER,		0
76	KYF467	125 HENNINGER DR	RUSHVI	CDFLT	SCHUYLER,		100
77	WNZR616	S SIDE OF IL RT 103 AT 5 MI MARKER	RUSHVI	CDFLT	SCHUYLER,		200
78	WPAG688	S SIDE OF IL RT 103 AT 5 MI MARKER	RUSHVI	CDFLT	SCHUYLER,		0
79	WQM694	COUNTY COURTHOUSE	RUSHVI	CDFLT	SCHUYLER,		100
80	WPPD395	PLEASANT VIEW	PLEASA	CDFLT	SUPREME		0
82	WPMN447	PLEASANT VIEW	PLEASA	CDFLT	Supreme Radio		0
84	WPJZ703	2/3 MI W & 2.3 MI N	PLEASA	CDFLT	Supreme Radio		0
85	WPGY337	1 KM W 1 KM N	PLEASA	CDFLT	SUPREME		0
87	WNVI227	COR OF OLD MACOMB RD &	RUSHVI	CDFLT	TWO RIVERS FS		0
89	KNKN552	RUSHVILLE CELL SITE: 4 MILES EAST	Rushville	CDFLT	USCOC OF		200
90	WMT432	4 MI E	RUSHVI	CDFLT	USCOC OF		0
91	WPAZ603	4 MI S ON RT 67 TO WHITE OAK RD	RUSHVI	CDFLT	WARD, JERRY		0
93	WPUZ448	13150 Il Hwy 9	Good	CDFLT	Pioneer Hi Bred		
95	WQKF307	Adams Road	Rushville	CDFLT	Cass Cable TV		200

FireStation Facilities Report

ID	Name	Address	City	Class	Stories	YearBuilt	ReplaCost
1	SCHUYLER COUNTY	234 SOUTH MONROE	RUSHVILLE	EFFS	1	1977	
2	Hickory-Kerton Fire	Woodford Road	Astoria	EFFS	1	1981	
3	Browning Fire Dept	Walnut ST	Browning	EFFS	1	1981	

ID	Name	Address	City	Class	Stories	YearBuilt	ReplaCost
5	Rushville Fire Department	220 W Washington	Rushville	EFFS	1	1965	
6	Industry Fire Protection	I116 S. Main St.	Littleton	EFFS	1	1956	

Hazardous Materials

ID	Name	Address	City	Class	EPAID	ChemicalName
1	Ferrell Gas	US 24	Rushville			L Propane
2	Amerigas	US 24	Rushville			L Propane
4	Bartlow Brothers	S. Libery St	Rushville			Ammonia
5	Runkle Fertilizer	IL 101	Littleton			Lorsban
7	Two Rivers FS	605 Brown Street	Rushville			Ammonia
9	Enbridge Energy					Crude Oil

Dams Report

ID	Name	River	City	Owner	Purpose	Height (ft)	ReplaCost
1	CAMP IMMANUEL LAKE DAM	TRIB HARRIS	BADER-	Church of the	R	33	
2	MCCORMICK POND DAM	TRIB TOWN	RIPLEY-	John McCormick	R	27	
3	PEABODY LAKE	TRIB SUGAR CREEK	BEARDSTOWN	Peabody Coal	O	65	
4	WADDELL DAM	TRIB WILLOW CREEK		Larry & Virginia	DR	33	
5	FREEMAN	WILLOW CREEK	INDUSTRY	Freeman United	O	40	
6	COAL & CRANE WATERSHED-	NW TRIB.-BLUFF DITCH	MEREDOSIA	(SEE REMARKS)	CD	37	
7	COAL & CRANE WATERSHED-	NW TRIB.-BLUFF DITCH	MEREDOSIA	(SEE REMARKS)	CD	41	
8	COAL & CRANE WATERSHED-	NW TRIB.-BLUFF DITCH	MEREDOSIA	(SEE REMARKS)	CD	38	
9	COAL & CRANE WATERSHED-	NW TRIB.-BLUFF DITCH	MEMEDOSIA	(SEE REMARKS)	CD	45	
10	COAL & CRANE WATERSHED-	NW TRIB.- BLUFF DITCH	MEREDOSIA	(SEE REMARKS)	CD	46	

ID	Name	River	City	Owner	Purpose	Height (ft)	ReplaCost
11	COAL & CRANE WATERSHED-	NW TRIB.-BLUFF DITCH	MEREDOSIA	(SEE REMARKS)	CD	52	
12	COAL & CRANE WATERSHED-	WEST TRIB.-ILLINOIS RIVER	MEREDOSIA	(SEE REMARKS)	C	27	
13	Schuyrush Lake Dam / Coal &	CRANE CREEK	MEREDOSIA	CITY OF	CS	56	
14	COAL & CRANE WATERSHED-	COAL CREEK-TRIB BLUFF	MEREDOSIA	(SEE REMARKS)	C	45	
15	COAL & CRANE WATERSHED-	THURMAN BRANCH-TRIB.	MEREDOSIA	(SEE REMARKS)	C	48	
16	CROXTON POND DAM	TRIB-LITTLE CEDAR CREEK	CAMDEN	J. D. CROXTON	RO	25	
17	BRINEY POND DAM #1	TRIB-ELM CREEK-ILL.	BEARDSTOWN	ROGER BRINEY	CRO	36	
18	GILL POND DAM #2	TRIB-S. BRANCH SUGAR	RAY	EARL GILL	RFO	33	
19	ROGER BRINEY POND #2	TRIB-ILLINOIS RIVER	BEARDSTOWN	RODGER BRINEY	CRFO	37	
20	Dam on Willow Creek	Williow Crek	Littleton - off		R		

EOC Facilities Report

ID	Name	Address	City	Class	YearBuilt	ShelterCap	Stories	ReplaCost
1	Schuyler County	234 S Monroe St	Rushville	EFEO	1977		1	$1,110
2	Spoon River College	706 Maple Ave.	Rushville	EFEO	2006			

User Defined Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
3	Schuyler County Mental Health	127 S. Liberty Street	Rushville	EFMC	Clinic	1		
4	Schuyler County Highway	121 Henniger Drive	Rushville			1		
5	U of I Extention Building	710 Maple Ave	Rushville		Office	1		
7	Cross Roads Motel	w. Clinton	Rushville		Shelter	1		
8	Schuyler County ESDA Field	110 W. Broadway	Littleton		ESDA	1	1970	
9	Assembly of God Church	RR 1	Rushvile	REL1	Shelter	1		
10	1st Baptist Church of Littleton	Church Street	Littleton	REL1	Shelter	2		

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
11	1st Christian Chruch	390 N. Liberty	Rushville	REL1	Shelter	2		
12	1 st Presbyterian Church	301 W Washington	Rushville	REL1	Shelter	2		
13	1 st Southern Baptist Church	426 Maple Ave Rushville	Rushville	REL1	Shelter	2		
14	1st United Methodist Chruch	210 West Jefferson Street	Rushville	REL1	Shelter	2		
16	Faith Christian Fellowship	Schuck Lane	Rushville	REL1	Shelter	2		
17	Free Methodist	217 S Liberty Street	Rushville	REL1	Shelter	2		
18	Free Methodist Church Camp	Old Macomb Road	Rushville	REL1	Shelter	2		
19	Green Gables Motel	645 W. Lafayette Street	Rushville	REL1	Shelter	1		
21	Littleton Community Building	Main Street	Littleton	GOV	Shelter	1		
22	Littleton Methodist Chruch	Main Street	Littleton	REL1	Shelter	2		
23	Nazarene Church	621 E Washington	Rushville	REL1	Shelter	2		
24	Scripps Park Community Building	Old US 24\Golf Course Road	Rushville		Shelter	2		
25	United Methodist Church	Benton St	Camden	REL1	Shelter	2		

Police Station Facilities Report

ID	Name	Address	City	Class	Stories	ShelterCap	YearBuilt	ReplaCost
1	Browning Police Dept	204 W Lafayette St	Browning	EFPS				1554
2	Rushville Police Dept	220 W Washington St	Rushville	EFPS				1554
3	Schuyler County Sheriff	216 W. Lafayette St	Rushville	EFPS				2

School Facilities Report

ID	Name	Address	City	Class	Students	Stories	YearBuilt	ReplaCost
1	RUSHVILLE-INDUSTRY	730 N CONGRESS ST	RUSHVILLE	EFS1	394			6778.8916
2	SCHUYLER INDUSTRY	750 N CONGRESS ST	RUSHVILLE	EFS1	374			5515.5303
3	WASHINGTON ELEM	100 BUCHANAN ST	RUSHVILLE	EFS1	236			2900.3234

ID	Name	Address	City	Class	Students	Stories	YearBuilt	ReplaCost
4	WEBSTER ELEM SCHOOL	310 N MONROE ST	RUSHVILLE	EFS1	245			3061.316
5	Spoon River Community	706 Maple	Rushville	EFS2		1		1000

Potable Water Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
1	ASTORIA WTP	ILLINOIS ROUTE 100	ASTORIA		WWT			36963
2	RUSHVILLE WTP	HILLTOP TANK ROAD	RUSHVILLE		WWT			36963
3	Hickory Kerton WTR COOP	Hierman St.	Browning		WWT			36963
4	Browning Water Works	Hierman St.	Browning		WWT			36963

Medical Care Facilities Report

ID	Name	Address	City	Class	Function	Beds	Stories	ReplaCost
1	SARAH D	238 SOUTH CONGRESS STREET	RUSHVILLE	EFHM	Hospital	58	2	7770
2	Synders Vaughn_Haven	135 S. Morgan Street	Rushville	EFHM	Nursing	99	1	
3	Culberston Gardens	400 W. Logan Street	Rushville	EFHS	Nursing		1	
5	Schuyler County Public	127 S. Liberty Street	Rushville	EFMC	Clinic		1	

WasteWater Facilities Report

ID	Name	Address	City	Function	Class	Stories	YearBuilt	ReplaCost
1	RUSHVILLE STP	SOUTH LIBERTY STREET	RUSHVILLE		WDF			73926

Appendix G: Critical Facilities Map

-see attached map.